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ABSTRACT

To aid in assessing the employability of individuals and of various groups of individuals in different types of occupations, the general abilities and specific skills required of workers in different occupations were studied. Data on a comprehensive set of occupations were obtained from the Dictionary of Occupational Titles (DOT) job ratings and from the archive of Position Analysis Questionnaire (PAQ) research. Factor analyses of these data indicated that jobs can be characterized by three major competency dimensions: academic aptitudes, psychomotor aptitudes, and dealing with people. Occupations were classified into 36 groups according to their demands for each of these general competencies. The specific skills, activities, and working conditions of individual occupations were examined to show to what extent the jobs within the occupational groups vary in their more specific demands. Academic aptitude was found to be only one dimension distinguishing jobs; different jobs required very different combinations of abilities. Implications were derived for designing high school programs to further the employability of youth with only low to moderate academic skills. (Appendixes, amounting to approximately one-half of the report, include data and materials used in the study, including listings of abilities and activities related to various occupations.) (Author/YLB)

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November 1981

A SKILLS MAP: THE GENERAL AND SPECIFIC COMPETENCIES REQUIRED IN DIFFERENT OCCUPATIONS

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A Skills Map: The General and Specific Competencies Required by Different Occupations

Progress Report

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November 1981

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Abstract

This report examines the general abilities and specific skills required of workers in different occupations. Data on a comprehensive set of occupations were obtained from the U.S. Employment Service's Dictionary of Occupational Titles job ratings and from the archive of Position Analysis Questionnaire research. Factor analyses of these data indicated that jobs can be characterized by 3 major competency dimensions: academic aptitudes, psychomotor aptitudes, and dealing with people. Occupations were then classified into 36 groups according to their demands for each of these general competencies. The specific skills, activities, and working conditions of individual occupations were also examined to show to what extent the jobs within the occupational groups vary in their more specific demands. Academic aptitude is the most important dimension distinguishing jobs, but the results show that it is not the only one and that different jobs may require very different combinations of abilities, some high and some low. Implications for designing high school programs to further the employability of youngsters with only low to moderate academic skills are briefly discussed.

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The Problem of Youth Employability

The 1970's was a decade in which much effort was devoted to providing equal access for all social groups to higher education and jobs. Although much progress has been made, it is now being increasingly recognized that there are some groups that present special problems and that will require special efforts if they are to be brought into the mainstream of American society. Unemployment rates among minority youth -- which have for a long time been much higher than those among white youth -- have been steadily rising over the last few decades. At the same time, the proportion of minority men who are in the labor force (working or looking for work) has been steadily dropping. There are fears that great proportions of minority youth will fare very badly in the labor market all their lives, especially because they may never have experienced a social setting in which many adults are part of the "working world." At the same time that concern with youth unemployment and attachment to work is rising, so too are fears that a permanent minority underclass is being created within our society (e.g., Wilson, 1978). Although there is a growing minority middle class, there is a very large segment of the minority population which is not faring any better than it used to -- and for whom there are no clear prospects of positive change. The specter of an ever weaker attachment to the labor market among minority youth makes the prospect of a permanent underclass even more real.

Although many explanations have been put forward to account for the existence of such particularly handicapped social groups, one which is receiving increasing attention is that of employability. The Education Daily (January 8, 1980) reports that a study released by the Labor Department's Office of Youth Programs concluded that "private sector

employers are unlikely ever to hire substantial numbers of low-income youth because they lack basic academic and work skills." Employability has also been a focus of several recent analyses of youth and minority employment (Mangum, 1976; Carnegie Council on Policy Studies in Higher Education, 1979).

Throughout this century the American public has looked to its schools to help prepare its youth for work. Basic literacy and good work habits have been the school's goal for all students, with more specialized training in either vocational or postsecondary schools being the goal for a smaller proportion of students. And so in discussions of youth employability people once again turn to the school as a setting where employability can be fostered. Various mixes of school and work have been proposed for several different types of students (e.g., Carnegie Council on Policy Studies in Higher Education, 1979). It has also been pointed out in the Carnegie Report that continued schooling, at least in its traditional form, may even be destructive for some pupils and that they should neither be required nor encouraged to remain in school after age 16. Others have pointed to schools as failing to provide even the rudiments of a basic education, with unacceptable proportions of students graduating from high school without the most basic skills.

What is Employability?

While discussions of employability invariably shift to the role of education and training, less attention is paid to just what it is that constitutes employability. People have focused variously on work habits, basic competencies, as well as other personal traits. Employability undoubtedly does consist of many things, including the ability to locate

jobs and convince employers that one would make a good employee; the dependability, punctuality, and commitment that constitute good work habits; basic literacy and interpersonal skills; as well as the special attributes that may be required for particular jobs.

Some of NIE's projects have focused on various aspects of employability. For example, the work on generic skills and adaptability at NCRVE has helped to identify what makes a worker particularly flexible in the types of jobs he or she can obtain and perform well in (e.g., Faddis, 1979; Altman, 1976; McKinlay, 1976; Sjogern, 1971). Related NIE work on the transferability of skills as examined through career change patterns (e.g., DauffenBach, 1980; Sommers, 1979; Gottfredson, forthcoming) also provides evidence about what personal and job factors increase a person's chances of moving between particular jobs. Work by Peterson at FWL focuses on yet another trait -- work orientation. All of the foregoing studies focus on personal traits which are undoubtedly important.

However, we still have little idea of what competencies are actually required of workers in different jobs, of what skills employers look for when they are hiring. While instilling traits such as good work habits may be very important, we still do not know if students are employable until we know if they have the skills that employers need. If students, as well as their parents and teachers, were well aware of which types and levels of skills are important for different jobs, it would make clear to them what the consequences might be of not developing various competencies -- including the basic ones of reading, writing, and math. This study focuses on such job-related worker competencies.

Previous Research on How Jobs Differ

People vary considerably in the work attitudes and skills that employers find valuable and thus they differ in their attractiveness to employers. But not all jobs require the same skills, temperaments, or other personal characteristics. That is, what constitutes employability varies to some extent from job to job. All employers may want punctual, honest, or reliable employees, but some jobs require mechanical skills, others salesmanship, and yet others physical strength. Specific people may be very employable in jobs requiring the mechanical but not the enterpreneurial skills, whereas the opposite may be true of other individuals. Thus, there is no one dimension of employability; but it varies according to the job.

The competencies required by a job are not the only criteria by which an employer selects employees (others might be sex, race, age, physical appearance, credentials, mannerisms, etc.) but competencies certainly play an important role in personnel selection. They should become increasingly important as employers are encouraged by equal employment opportunity regulations to demonstrate the validity and job-relatedness of their selection procedures.

Three different disciplines point to important variations among jobs. One is the research on the segmentation of labor market -- how jobs are clustered into somewhat isolated and non-competing groups. Dual labor market theory with its emphasis on primary and secondary labor markets (Doeringer and Piore, 1971), Marxist class analyses (Wright, 1978), and the dual economy perspective (Beck, Horan and Tolbert, 1979) are several examples of this approach. This segmentation research focuses on differences in job characteristics (e.g., unionization, type

of industry) that affect who is hired in each job sector and why people are paid differently in different sectors. It is a major approach in both sociology and economics for explaining sex and race segregation in occupations. Although the competencies required to perform jobs well are only one type of job characteristic this approach acknowledges as important, it clearly points to the need to understand what is different about jobs themselves before one can understand why some types of people are hired and promoted but others are not, and how schools contribute to employability.

A second research tradition that stresses differences among jobs is that of vocational psychology. The interest here is primarily in measuring differences in the types of work people would like to do, but the fundamental assumption is that different fields of work require very different personal temperaments and competencies. Holland's (1973) occupational typology was developed from this tradition, for example, and it has been useful in research on career development and occupational segregation by race and sex.

The third tradition is the one most closely related to the approach we will be taking in this study -- job analysis research within industrial psychology. The emphasis here is on a very practical concern of employers -- how to select the best potential workers in the fairest way. Both performance and equity concerns make it important to identify just what it is that is required of a worker to do a job well. The research activity, already extensive, has been intensified by recent equal opportunity regulations requiring demonstrations of the validity of selection procedures. The job analysis research tradition has produced a large number of methods for analyzing jobs, as well as many studies which have detailed the tasks and requirements of various jobs.

Although the job analysis literature is quite extensive, it has been concerned primarily with personnel selection and only seldom with the concerns of this study -- assessing employability. For example, job analysis studies usually focus on only the jobs of interest to a particular firm or industry. Classifying jobs according to their similarities and differences is currently an active concern in industrial psychology (for purposes of "validity generalization" in testing the fairness of employer selection procedures), but these efforts are also largely related to the jobs in specific settings or part of research of a proprietary nature. And as Pearlman (1980) pointed out in his review of job classification studies, classifications will differ according to the purposes for which they are constructed. As just noted, classification in the job analysis literature has rarely been motivated by the issue of employability, and so is not likely to be useful for such concerns. Pearlman reviews evidence, however, that supports the possibility of developing a manageable but comprehensive occupational classification based on competency patterns; the research shows that the broad abilities important on jobs do not vary much according to differences in the very specific tasks performed in similar jobs (i.e., skills required are more general in nature than are tasks performed).

Pearlman (1980) and Sjogern (1971) review the few studies that have been concerned with education and training issues in the development of job classifications. These studies will be useful to us, but they too fail to have the breadth of focus required for a general analysis of employability requirements. These studies generally have focused on only small sets of occupations. In addition, many of them have been concerned with how best to structure specific curricula. Our concern

is not with the detailed issues of how to structure specific training programs, but to look more generally at how different settings do -- or could -- contribute to the development of different kinds of competencies and how different types of training and education might be sequenced.

Other research in the job analysis field provides the basic building blocks for constructing a comprehensive classification of jobs according to their required competencies, though these building blocks have not yet been used for this purpose. For example, the Position Analysis Questionnaire (PAQ; McCormick, Jeanneret, and Mecham, 1972; Mecham, McCormick and Jeanneret, 1977a; McCormick, 1979) has been used in numerous firms to measure almost 200 specific job characteristics for several thousand job titles. This information had not previously been used to construct a profile of jobs in the U.S. economy, but we use it to do so. The comprehensive job analysis information collected in firms by the U.S. Employment Service to create its Dictionary of Occupational Titles (DOT) also provides valuable data on job requirements for thousands of occupations (Miller, Treiman, Cain, and Roos, 1980; Cain and Treiman, 1981; Cain and Green, 1980).

Objectives of This Study

The general objective of this study is to better understand the types, levels, and combinations of competencies required by different occupations. A realistic, comprehensive, and organized view of the abilities and skills required to perform well in various jobs would help people to understand what competencies youngsters probably need to get various entry level jobs and to eventually be promoted to other jobs. And comparing the competencies required by jobs to the skills actually

possessed by sub-populations would help to define more clearly their employment problems and prospects.

Previous research on human abilities and skills suggests that there are a few basic dimensions of competency, that is, a few general types of competencies; these include cognitive (i.e., academic) abilities, psychomotor abilities, and interpersonal competencies. (Usually, however, interpersonal competencies have been studied under the rubric of personality rather than ability.) These dimensions are fairly independent, that is, not very highly correlated. It was assumed that these major dimensions of human abilities would be reflected in job requirements. That is, it was assumed that these general ability dimensions would also constitute the most fundamental differences among jobs. One specific objective of this study, then, is to determine what the fundamental dimensions of job competencies are and to group occupations according to these general requirements. Stated another way, one objective is to create a job classification that would show the most general and important differences in job competencies required. It was expected that the major dimensions of job competencies would be fairly independent (also reflecting the patterns of human abilities) and, therefore, that there would be jobs requiring high motor or interpersonal skills but only minimal academic competency.

Although extremely important, these general competencies only partially describe the skills jobs require. Even though some jobs may be similar in overall cognitive or interpersonal competencies required, they may differ in the specific cognitive or interpersonal skills required (e.g., analysis vs. decision making and teaching vs. negotiating). Thus,

a second objective is to show how specific skills are related to the different general competency dimensions and to show for which groups of occupations -- and which specific occupations -- they are particularly important. The second objective, then, is to supplement the job classification (based on general competencies) with charts detailing the specific behavioral requirements of various occupations.

Of what use would such information be -- and to whom? Some of the more practical uses of this information include the following. (a) There are no comprehensive classificacions of jobs in the U.S. based on the competencies they require. There is much information about what skills particular jobs require, but the data are piecemeal and not organized to provide a comprehensible overview of jobs in the U.S. economy. (b) Showing what types of skills are required in different jobs should make the link (or potential link) between school and work clearer to students as well as to teachers and administrators. It is apparent that schools provide primarily academic competencies, which are especially important in some types of jobs, but their link with jobs requiring primarily non-academic skills is much weaker. Schools should not be expected to have strong links with all jobs, but if administrators were more aware of what schools themselves cannot realistically provide students, they might be more active in fostering attractive alternatives for the less academically inclined or able students. And as a recent book on employability and public policy (Mangum, 1976, p. 268) notes: "Public funds are frequently wasted by providing training in the schools for skills best learned on the job. Better criteria must be developed for deciding which skills to provide in public schools." (c) This information might help promote

a shift from current emphasis on credentials for employability to an emphasis on the actual competencies schools are supposed to promote and that credentials are supposed to reflect. For example, it could be quite useful to make clear to students and teachers what levels or competencies in various basic skills are generally required for entering and succeeding in different kinds of jobs. This would give high school students more concrete and meaningful academic goals to reach for than the current open-ended injunction to "do well" and graduate from high school. It would also make clearer the consequences of failing to develop certain academic or non-academic competencies. A more controversial implication is that some youngsters need not pursue academic studies above a certain minimum competence level if they choose to pursue jobs where non-academic rather than further academic training would be most useful. (d) Information about job competencies required might help better diagnose the employment problems and prospects of particular sub-populations -- dropouts, minority groups, etc. By comparing current levels of competencies in these populations to the levels that different jobs require, we might be able to determine how many and which jobs would be open to, and which would be closed to, these people without further education or training. It might also show how competitive these groups are -- or are not -- with other sub-populations seeking jobs.

Data Used in the Analyses

Three major already-existing sets of data were used in this study: The Dictionary of Occupational Titles (DOT), the Position Analysis Questionnaire (PAQ), and 1970 Census data on employment. Each of these sources was chosen because it provides data on a large and widely representative set of jobs in the U.S. economy. All of these

data were originally collected at great cost, in some cases over many years, but they now provide us an economical way to explore job competency requirements.

Dictionary of Occupational Titles (DOT)

The U.S. Employment Service was established during the Depression to help classify workers and place them in appropriate jobs. Since then the Employment Service has carried out extensive work in cataloging and describing jobs. Perhaps the most well known aspect of this work is the periodically revised dictionary or compendium of job titles and job descriptions (e.g., U.S. Department of Labor, 1965,1977). Another aspect of that research has been the production of ratings of jobs according to their activities, requirements, and working conditions. Specifically, as of the latest edition in 1977, there are ratings on 47 job attributes: worker functions (3), training time (5), aptitudes (11), temperaments (10), interests (5), physical demands (6), and environmental conditions (7). (These 47 scales are described in Appendix A.) These data have a number of advantages and disadvantages that are briefly discussed below.

An evaluation of the DOT data and the methods used to produce them has been provided by the National Academy of Sciences (Miller et al., 1980). That report summarizes the little evidence that there is about the reliability and validity of the job descriptions and job ratings. First, data collection procedures were less than ideal. Sixteen percent of DOT occupational descriptions are unsupported by job analysis schedules and an additional 29% are supported by only one schedule. In addition, only two-thirds of these schedules are acceptable by Handbook procedures (U.S. Department of Labor, 1972). Another shortcoming of the data is that not all types of occupations are equally well represented. For example,

manufacturing jobs seem to be overrepresented and retail and service jobs are underrepresented in the DOT. A few types of work, such as college teachers, are very poorly represented (see Appendix B). Nevertheless, when classified according to the Census Bureau's classification of jobs, 396 of the relevant 427 census categories are represented by the DOT sample (see Appendix B). A more serious shortcoming is that there is little data on the reliability and validity of the attribute ratings. In a study of 24 of the attributes, the NAS report found that reliability was moderately high for 22 of the attributes (ranging from .64 to .84 at a minimum), that reliability was poor for two other attributes (STRENGTH, THINGS), and that it was lower for service than for manufacturing jobs. The report also suggests that there may be somewhat of a "halo" for many of the job ratings (i.e., raters might have had difficulty distinguishing among the scales and so have rated an occupation similarly on all those scales) because it reports that correlations among some of the scales are quite high, particularly when the same rater is responsible for all the ratings for an occupation.

In sum, the NAS report concludes that much more evidence is needed on the validity of the DOT data, particularly because of some of the procedural shortcomings in the collection of the data.

The NAS report, however, also makes clear that the DOT data are the most comprehensive set of information on job characteristics that we have, that much of it <u>is</u> based on direct observation of jobs, some aspects of the data are frequently used, and that they are potentially very valuable. Job descriptions and attribute ratings are available for a very large number (12,099) of job titles, 12,064 of which are civilian titles -- the titles of interest in this study. (These data have not

been published yet, but they are available on computer tape from the Department of Labor.) These ratings were provided by trained Employment Service analysts throughout the country, from many different industries, and from establishments of varying size.

Of particular importance to this study, the DOT includes ratings of general cognitive and non-cognitive aptitudes. As discussed earlier, a major objective of this study is to examine the patterns of aptitudes required by different occupations. The DOT is the only source providing such data for a large and comprehensive set of occupational titles. The aptitudes rated are the factors of the General Aptitude Test Battery (GATB; U.S. Department of Labor, 1970): intelligence, verbal aptitude, numerical aptitude, spatial perception, form perception, clerical perception, motor coordination, finger dexterity, manual dexterity, eye-hand-foot-coordination, and color discrimination. This set of aptitude ratings provides good coverage of general cognitive and psychomotor aptitudes, but not of interpersonal skills which were also assumed in this study to be important. As noted above, interpersonal skills are usually discussed as personality rather than ability measures and are not included in aptitude batteries. Thus, all people-related interests, temperaments, and activities in the DOT and PAQ were considered potential indicators of interpersonal competencies. This will be discussed further later.

The other DOT ratings are related in varying degrees to these general aptitudes. It was assumed that the bipolar interests (e.g., in creative vs. routine work), the temperaments (e.g., influencing people), worker functions (e.g., complexity of work with people), and the education and training required by jobs would be correlated with these general aptitudes,

but not be alternative measures of them. Other ratings, such as working conditions (e.g., extreme heat or cold), were assumed to have no logical relation to the aptitudes related and most such scales have been ignored in this study.

Position Analysis Questionnaire (PAQ)

The PAQ was developed by a team of industrial psychologists during the last two decades to describe what workers do in different jobs (e.g., McCormick, Jeanneret, & Mecham, 1972; Mecham, McCormick, & Jeanneret, 1977a). This questionnaire provides a structured means for rating a wide spectrum of jobs according to 194 "job elements:" types of information input (35), mental processes used (14), work output (49), relationships with other persons (36), job context (19), and other job characteristics such as work schedule and method of receiving pay (41). The questionnaires are completed either by someone intimately familiar with the job (e.g., a job analyst, worker, or supervisor) or by interviewing someone who is familiar with the job. Objectives of the PAQ are to enable firms to create more effective and equitable compensation, performance appraisal, training, and career guidance systems.

The PAQ Technical Manual and Users Manual (Mecham, McCormick & Jeanneret, 1977a, 1977b) summarize information about the quality of the PAQ data. Reliability of the job element ratings average from .68 to .78. PAQ results are reported to firms in terms of several dozen summary "dimension" scores, and these scores are more reliable than the elements.

Reactions to the PAQ by job analysts who have used it have been positive, though fewer than half were sure that the PAQ enabled them to describe jobs thoroughly.

Both the reliabilities and the descriptions of data gathering procedures suggest that the PAQ data are of higher quality than the DOT data.

The PAQ data are less comprehensive than are the DOT data, but still represent a large and heterogeneous set of occupations. At the time we obtained the PAQ data, there were ratings available for 1813 job titles representing 304 of the 427 census categories (See Appendix B). Health professionals, college teachers, and private household workers are poorly represented, with the remaining missing data being scattered throughout the remaining groups of census titles.

Like the DOT, the PAQ covers a variety of job characteristics, from specific capabilities workers must have to physical working conditions. Both rating systems are "worker oriented" rather than "task oriented," (McCormick, 1976), that is, they describe jobs according to the behaviors workers must manifest (what workers do) rather than according to the tasks that must be accomplished or products produced (what gets done). Nevertheless, there is an important difference between the DOT and PAQ for the purposes of this study. As already discussed, the DOT rates jobs according to general aptitudes required as well as other characteristics. The PAQ does so only for psychomotor aptitudes and not for general cognitive abilities. In contrast, the PAQ focuses on more specific behaviors or skills (e.g., making decisions, instructing people, persuading people, interpreting behavior) which may require or reflect general cognitive abilities but which are more specific, narrow competencies.

The differences can be summarized by saying that the PAQ items are at a lower level of generality. Thus, while there is some overlap

between the DOT and PAQ, the PAQ provides more specificity in describing what people need to know in various jobs. The more general abilities will be referred to interchangeably as aptitudes, abilities, and competencies. The terms skills, behaviors, and activities will refer to the more specific job requirements.

The PAQ data are proprietary and so are not available for the 1813 individual job titles. We were able to purchase the data aggregated to the level of the census categories for approximately 100 scales. The number of job titles falling within each census category and the number of PAQ questionnaires for those titles (ranging from 1 to 1589) are shown in Appendix B. Of the 194 job element scales, we purchased 64 that measured interpersonal or cognitive activities or that were otherwise of theoretical or practical importance for this study. We also purchased all 45 dimension scales. The job element items had been factor analyzed and dimension scores are the factor scores from those analyses. We did not purchase the job element scales for many of the PAQ motor tasks or abilities, but have used dimension scores in the analyses to measure those missing elements.

1970 Census Data on Occupations

The decennial census collects various types of information about workers which is subsequently published in tabular form according to the Census Bureau's 441-category job classification scheme. The 1970 census data that we have transferred to computer tape for each occupation include: number of employed men, number of employed women, percent government workers, percent Negro, mean hours worked, median age of worker, median years of school completed, and median income (U.S. Bureau of the Census, 1973, Tables 1 & 38). These data

provide, for example, information on how many jobs each occupation offers men and women, the occupations most populated by young people, and in what sector of the economy they can be found.

Additional data have been appended to this set of data that might be of interest to students, counselors, or others: Holland (1973) occupational codes (widely used in vocational counseling) and occupational prestige scores (widely used in sociological research). Procedures for obtaining these data are described in Gottfredson and Brown (1978).

Preparing the Data for Analysis

The two major tasks were obtaining usable computer tapes for all three sets of data and reorganizing the data according to a common set of occupational categories. The 441-category 1970 census classification was chosen as the common classification scheme.

DOT. A computer tape of the DOT "master file" was obtained from the Occupational Analysis Branch of the Department of Labor. Generic titles (which have no ratings) and verbal descriptions were removed from the file, leaving only the attribute ratings. Some of the data were reorganized or recoded so that they would be more easily used in a quantitative analysis.

All jobs in the DOT had census occupational codes assigned to them and these codes were checked to the extent reasonable. Occasional invalid occupational codes (e.g., codes that should not exist) were corrected, strictly military jobs (e.g., infantryman) were deleted, and the one redundant census code (salesmen, nec, code 280) was recorded into one of its more specific codes (281-285).

The file was then aggregated according to census codes. The result was a file of 396 census occupational titles where the ratings represent

the average score for all job titles with the same census occupational code. The number of DOT job titles falling within each census category are shown in Appendix B.

PAQ. The first task was to decide how to aggregate the 1813 PAQ job titles into the census categories. The 1977 edition DOT codes which have been assigned by the PAQ team to the PAQ titles were used together with publications describing the specific titles within each census category (U.S. Bureau of the Census, 1971a, 1971b) to classify each of the PAQ titles to a census category. This list was used by the PAQ team to aggregate the PAQ data for us. As with the DOT, the resulting PAQ scores are the unweighted average scores for all job titles falling within the same census code. The number of PAQ job titles and the number of respondents providing PAQ data within each census code are shown in Appendix B.

1970 Census. Published data (Tables 1 and 38 of the volume Occupational Characteristics, U.S. Bureau of the Census, 1973) were keypunched. Only those entries corresponding to an occupational category represented in the census classification (U.S. Bureau of the Census, 1971b) were keypunched and subtitles and other redundant categories were omitted. In some cases the data had to be adjusted or estimated. For example, apprentices are listed separately from the craftsmen to which they are apprenticed, but data for the latter always include data for the former in the published sources.

Of the total 441 categories in the census classification, 14 had to be omitted because their data are not useful in this context: the 12 categories to which people with unknown occupations were "allocated," retired members of the armed forces (code 580), and salesmen, nec (code 280,

a code redundant with codes 281-285). A 442nd code which sometimes replaces the 12 allocation categories (code 995, occupation not reported) was also omitted. The total list of census codes is shown in Appendix B.

Analyses

There were three stages of analysis: (a) identifying the major dimensions of competencies required by jobs, (b) grouping occupations into a smaller number of categories according to the major types of aptitudes required (i.e., creating a competency-based job classification), and (c) describing these groups and the individual occupations within them according to the more specific job skills and working conditions characterizing them.

Determining the Major Dimensions of Competencies

Factor analysis was used to determine what the major dimensions are among the various aptitude measures. Only the job attribute scales that seemed to reflect competencies to some extent (e.g., some temperaments, interests, specific behavior required) -- were used in the factor analyses because the objective of the factor analyses was to determine the major dimensions of job competencies required, not of all job attributes. Variables measuring education and training, working conditions, and method of receiving income were omitted from the factor analyses. When it was ambiguous whether or not an attribute might measure either a general or specific competency, the item was included.

Several factor analyses were performed to see if the resulting factors changed substantially when different types of job items were included in the analyses and to see if the same factor structure would be found among jobs at different levels. It is possible, for example, that the

major types of non-academic competencies required by jobs differ in those jobs requiring low versus high academic skills.

Factor Analyses of the DOT. The first set of factor analyses were performed with only the DOT variables because they are more clearly measures of general abilities than are the PAQ items and because DOT scores are available for 396 of the 427 occupations, whereas PAQ data are available only for 304 of the occupations (3 of which do not have DOT data). In the first analysis orthogonal rotation was used. A second analysis used oblique rotation to see if major competency factors might, in fact, be highly correlated. Tables 1 and 2 present the results of these two analyses.

The major conclusions are that:

(1) The four major dimensions of general job aptitudes as measured by the DOT are academic aptitudes (e.g., facility with language and mathematics), dealing with people (presumably reflecting interpersonal competencies), psychomotor aptitudes (e.g., manual dexterity and coordination), and strength. The first three, and most important, factors are very similar to the much-used data-people-things trichotomy of worker functions in the DOT. Those three DOT variables do, in fact, correlate very highly with the three respective factors. These were also the three major dimensions predicted from studies of human abilities.

(2) By far the most important dimension distinguishing among jobs is academic aptitudes.

(3) The factors are essentially the same whether they are forced to be statistically independent (orthogonal) or allowed to be correlated (oblique). This was also predicted from knowledge

of human ability patterns.

(4) When oblique rotation is used, it is clear that dealing with people is slightly positively correlated with requirements for higher academic aptitudes (r=.24) but it is negatively correlated with psychomotor aptitudes (r=-.35). The following discussion documents these conclusions.

Tables 1 and 2 show only those factors with eigenvalues greater than 1.0, a common criterion for deciding how many factors to look at. Variables have been rearranged and all factor loadings lower than .25 have been omitted in order to more clearly show the composition of the four major factors.

Table 1 (with results for the orthogonal rotation) shows that mathematical and numeric aptitudes (MATHDOT and NUM), reasoning and language abilities (REASONDT and LANG), intelligence (INTEL), and complexity of dealings with data (DATA) all correlate at least .90 with the first factor; this is clearly an academic aptitude or general intellectual ability factor. Interests in creative versus routine work (ICREATE), in science versus business (ISCIENCE), in people and the communication of ideas rather than in things (IDATA), form perception (FORMPER), clerical and spatial aptitudes (CLERICAL and SPATIAL), and in complex dealings with people (PEOPLE) are associated to a lesser extent with this factor. The second factor involves dealing with people (DEPL) at a complex level (PEOPLE), and interests in business rather than science (ISCIENCE), social welfare rather than machines (IMACH), in people and data rather than things (IDATA), and in receiving esteem rather than productive satisfaction from work (IPRODUCT). The third factor, psychomotor aptitudes, primarily reflects finger dexterity (FINDEX) and manual coordination (MOTORCOR) followed in importance by complexity of dealings with things (THINGS), manual dexterity (MANDEX), form perception (FORMPER), and

color discrimination (COLORDIS). Finally, the fourth factor reflects strength and physically active, rather than sedentary, work; it correlates highly with strength (STRENGTH), eye-hand-foot coordination (IFTCOOR), and with not doing clerical work (CLERICAL).

All of the foregoing statements apply equally well to the results of the oblique rotation shown in Table 2. The overlap of items on the academic and people factors and on the people and psychomotor factors seen in Table 1 are clearly reflected in the correlations among the analogous oblique factors shown in Table 2, but it appears that one can consider these four factors as independent for most purposes.

Factor analyses were repeated to see if the overall picture of the structure of competencies revealed in Tables 1 and 2 applied equally well to different levels of work. That is, are these four dimensions useful in distinguishing jobs requiring lower than average, average, and above average intellectual skills? The sample of 396 occupations was divided into three groups of approximately equal size according to academic aptitude required. (Academic aptitude was measured as the sum of NUM and VERBALDT.) Separate factor analyses at these three levels led to the following conclusions:

(1) The same four dimensions of job aptitude shown in Table 1 are useful at all job levels.

(2) Although the same general dimensions are useful, the distinctions they draw within different job levels often involve different specific tasks or different broad levels along the same aptitude continuum. For example, a dimension might distinguish primarily between low versus moderate verbal aptitude in one set of jobs but between moderate versus high verbal aptitude in another set.

The following discussion documents these conclusions.

Tables 3, 4, and 5 show results for occupations requiring high, moderate, and low academic skills, respectively. These tables show results for orthogonal rotation. Oblique rotations were also performed, but the results are essentially the same as for the orthogonal rotations and so are not shown here.

Table 3 shows that the same four factors describe distinctions among high-level occupations as for occupations in general (Table 1). In this high-level group, however, there is almost no overlap or correlation between the academic and people dimensions. This is not surprising because the group is considerably more homogeneous in academic aptitude than are occupations in general. (Compare the standard deviations in Tables 1 and 3.) The academic factor is essentially the same, perhaps with a bit more emphasis on verbal skills in the high-level group. Clerical aptitude is no longer a sign of high-versus low-level work, but only of heavy versus sedentary work. The people factor is composed of the same variables, though there is more emphasis on distinctions between social welfare and machines (IMACH) than on business versus science (ISCIENCE). There is also an emphasis on <u>not</u> being mathematically inclined, which was not apparent for jobs in general on the people factor.

Looking at the means and standard deviations in the last two columns, the high-level group is (as expected) higher than average and more homogeneous on each of the academic aptitudes. For example, the level of complexity of dealings with data (DATA) of the average job is compiling information; for high-level jobs, it is at the level of analyzing and coordinating information. This high-level group is not, in general, more or less homogeneous in the people-related attributes. It is,

however, more likely to deal with science versus business (ISCIENCE) social welfare versus machines (IMACH) and to deal more often with people (DEPL).

The average job has only low-level dealings with people -- usually ranging between taking instructions to diverting others, the average being speaking/signaling. The high-level jobs range from serving to supervising, the average being pursuading.

The psychomotor factor is the same in both groups. The high-level group is a bit lower and more heterogeneous than average on the motor aptitudes (FINDEX, MOTORCOR, MANDEX) and complexity of involvement with things (THINGS), but a bit higher on spatial and form perception (SPATIAL, FORMPER). And although the strength factor is also the same, the high-level group involves more clerical (sedentary) work and less strength. Occupations in general require frequent lifting of objects at least over 10 pounds or a significant amount of standing or walking; such demands are less frequent in the high-level jobs.

Table 4 shows the results for occupations of moderate academic aptitude. This moderate-level group showed the greatest deviation from the pattern found for high-level jobs and jobs in general (Tables 3 and 1). The academic factor split into a verbal factor and a math factor.

Psychomotor aptitudes and dealing with people formed a bipolar factor. As was seen in Table 2, these two factors do tend to be negatively correlated in the general population of jobs. The strength factor is the same as in the other groups.

This moderate group is slightly lower though considerably more homogeneous than occupations in general (Table 1) on academic aptitudes; it is slightly higher than average on the strength factor. This group is somewhat above average (and higher than both the high-and low-level groups) on most psychomotor abilities (FINDEX, MANDEX, FORMPER, COLORDIS,

MOTORCOR), complexity of working with things (THINGS), and interests in machines versus social welfare (IMACH) and in productive satisfaction versus esteem (PRODUCT). However, this group is just as heterogeneous on the psychomotor attributes as occupations in general. Dealings with people are the same on the average as for occupations in general, and just about as heterogeneous.

Table 5 shows results for occupations requiring low levels of academic aptitude. The academic factor is essentially the same as for occupations in general, except that complexity of working with things (THINGS) now correlates more highly with this factor than with the psychomotor factor. The major difference on the people factor is that now the psychomotor skills of manual dexterity (MANDEX) and manual coordination (MOTORCOR) correlate more highly with the people factor (negatively) than the psychomotor factor. Thus, three of the variables usually defining the psychomotor factor now contribute to either the academic or to the people factor. The strength factor is essentially the same as in all other groups.

The low-level group, although showing much the same distinctions as the other groups, is lower on the average than the other groups on almost all the job attributes. All academic abilities are, of course, lower, but so are all the people-related attributes (PEOPLE, DEPL, INFLU) and most of the psychomotor ones (MOTORCOR, FINDEX, FORMPER, COLORDIS). This group is the most homogeneous in psychomotor skills, though not particularly different in homogeneity than the moderate group in academic aptitudes required. Although these occupations deal with things rather than people or data (IDATA) and with machines rather than social welfare (IMACH) more than do the other groups, they are lower than the moderate group in the level of complexity of dealing with things (THINGS). Most of the low-level jobs appear to require only the lowest levels of involvement with people --

taking instructions/helping or serving. These jobs are highest on the average in strength required, the mean score being approximately "medium work" (frequent lifting of up to 25 pounds).

Although the factor structures do not change appreciably when oblique rather than orthogonal rotation is used, the correlations among the oblique factors do highlight some interesting points. Requirements for dealing with people and for psychomotor skills tend to be somewhat negatively correlated at all levels. Strength and psychomotor skills are somewhat positively correlated, except at the lowest level. Academic and psychomotor skills are correlated (positively) only at the lowest level. Academic aptitudes and dealing with people are not correlated at any of the three levels, but they are for occupations in general. Other than this one case, the correlations among the factors at each level (for at least two of the three levels) are similar to those for occupations in general.

Factor Analyses of the PAQ and DOT Together. One objection that could be raised to the foregoing conclusions about the major dimensions of job competency is that these dimensions may reflect more the DOT analysts' preconceptions of jobs than of jobs themselves. As already noted, there may be a "halo" over many of the ratings. For example, if analysts thought the data-people-things trichotomy important, they may have assigned most variables to these three categories and then scored all variables within a group similarly for any particular occupation. To some extent the validity of these DOT factors can be tested by adding PAQ variables to the analyses.

Because the PAQ variables are more behavior oriented than they are aptitude oriented, one would not expect to find exactly the same factor structure when PAQ as well as DOT variables are included in one analyses. However, the factors and the variables composing them should not be dramatically different.

The 25 DOT variables were factor analyzed together with 49 of the most aptitude-related PAQ items. Of the 12 factors with eigenvalues above 1.0, only the first 6 were rotated. Table 6 presents the results for the orthogonal rotation. The major conclusions are that:

(1) The PAQ variables are largely incorporated into the original DOT factor structure.

(2) Several new, but less important, factors appear which are composed primarily of PAQ variables.

(3) The addition of the PAQ variables helps to interpret the DOT factors and add new meaning to them.

The first factor is still academic aptitudes and the same seven DOT variables correlate most highly with this factor. Over half of the PAQ variables correlated most highly with this academic factor. Mental activities such as combining information, writing, analyzing, deciding, and planning were the PAQ variables most highly correlated with this factor. There were two other major classes of PAQ variables -- less obviously academically related -- that also correlated more highly with this factor than with any other. High-level people-related activities (e.g., negotiating and public speaking), as well as the DOT variable measuring complexity of work with people (PEOPLE), also correlated moderately highly with this factor. Interpersonal conflict or strain, frustration, distractions, and personal sacrifice (CONFLICT, STRAIN, FRUST, DISTRACT, SACRIFC) are also found on the academic factor. These job attributes are correlated about .5 to .6 with both the DOT academic and DOT people variables. Thus, with the addition of the PAQ variables, the academic dimension becomes more of a "people" factor because of the addition of so many people-related tasks and conditions found primarily among high-level jobs.

The people factor still remains, but has a somewhat different and more specific interpretation than it does in Table 1 for DOT variables alone. Dealing with people (DEPL) does not imply interpersonal skills or activities of any particular nature as does the variable PEOPLE which measures level of complexity of those dealings. As already discussed, the most complex and difficult interpersonal activities loaded on the academic level factor. Supervising non-employees (SUPERVIS), entertaining people (ENTERTN), catering to people's needs (CATER), observing and interpreting people's behavior as a source of job information (BEHAVIOR), and an interest in social welfare versus machines (IMACH) are less related to job level than the people activities found on the academic factor and they constitute the new people factor.

An additional factor related to people appears with the addition of the PAQ variables. Dealing with people can involve dealings with "the public" (as for bank tellers or cashiers) or dealing with individuals or groups of individuals in more intimate or stable relationships (as do doctors, teachers, or social workers). This new factor reflects dealing with the public (D1M21). The other variables on this factor suggest that jobs dealing with the public require a good short-term memory (MEMORY) and require business rather than scientific interests (ISCIENCE). Other variables correlating moderately with this factor (but which correlate more highly with other factors) include distracting, strained, and frustrating situations (DISTRACT, STRAIN, FRUST) with much required contact with people (REQCONT) and catering to their needs (CATER).

The psychomotor factor is largely unchanged. Two PAQ variables are moderately correlated with this factor: performing controlled manual/related activities (D1M13) and using patterns as a source of job information (PATTERNS).

Likewise, the strength factor is much the same. Although strength correlates most highly (negatively) with the academic dimension, this variable and its PAQ counterpart (EXERTION) are two of the three variables most highly correlated with the strength factor. (D1M19, a supervision variable with unclear meaning, is the third variable). Once again sedentary work is negatively correlated with one factor -- CLERICAL, TRANSCRB, and D1M16. The meaning of D1M16 -- general physical coordination -- is not clear, but it is comprised partly of the use of keyboard devices which undoubtedly reflects sedentary work.

The other new factor is that of vigilance and it is comprised almost entirely of PAQ variables. In order of importance they are: vigilance of continuing changing events (VIGCHANG), vigilance of infrequent events (VIGINFRE), observation of events as a source of job information (EVENTS), need to recognize or identify certain objects or events (RECOGNIT), controlling machines/processes (D1M11), and eye-hand-foot coordination (IFTCOOR).

When the factor analysis is repeated using oblique rotation, the factors remain essentially the same and are only weakly correlated. The academic factor becomes more clearly academic as the high-level people variables recede in importance on that factor. The academic, people, and dealing with the public factors are all slightly correlated, though this was suggested by the overlap of the people-related variables on these factors in the orthogonal analysis.

In summary, the meaning of the DOT factors changes somewhat or becomes more specific with the addition of the PAQ variables, but the factors remain essentially the same. The psychomotor factor is defined almost exclusively by DOT variables even though the PAQ has items

measuring psychomotor activities. However, we did not purchase any of these PAQ psychomotor items, but instead relied on PAQ "dimension scores" which were constructed from a somewhat broader range of items (perhaps explaining their lack of relation to the psychomotor dimension). The vigilance factor is composed entirely of PAQ items and appears to represent a dimension not tapped by the DOT. The remaining four factors are composed of sensible combinations of both PAQ and DOT items.

Factor analyses including the 74 DOT and PAQ variables cannot profitably be repeated for each of the three job levels as was done for DOT variables alone. There would be too many variables for the number of cases involved (high, N=109; moderate, N=89; low, N=103).

Developing a Competency-Based Occupational Classification

The factor analyses suggested that at least four general competency dimensions are useful in describing jobs: academic, psychomotor, dealing with people, and strength. They also suggested that these dimensions can be treated as independent dimensions. Three of the four dimensions have been used here to create a competency-based job classification. Strength was omitted because it was less important than the others and would create a needlessly complex classification.

The job classification was designed to show which occupations require low versus moderate versus high levels of each of the three major types of general abilities. The strategy was to produce the classification in the way that would have the clearest meaning to people using the classification. Therefore, no complex statistical procedures (e.g., hierarchial clustering, use of factor scores) was used to produce the groups. The procedure was as follows.

"Marker" variables were chosen to represent each factor. The academic factor was represented by adding together scores on numerical aptitude (NUM) and verbal aptitude (VERBALDT). These two variables not only correlated very highly with the factor, but also seemed to represent what people usually think of as academic skills -- being able to handle language and numbers. The second factor is well represented by the sum of three variables -- finger dexterity (FINDEX), manual dexterity (MANDEX), and hand-related motor coordination (MOTORCOR). Only one variable was used to measure interpersonal aptitudes -- dealing with people (DEPL). Therefore, this dimension is referred to as "dealing with people." This one variable was important at all difficulty levels and other "people" variables were too restrictive in the particular types of interpersonal skills they measured (i.e., social welfare-IMACH, business-ISCIENCE) or give more weight to some interpersonal activities than others (e.g., PEOPLE). These three new factors are not statistically independent. The academic factor is correlated .45 with dealing with people and -.10 with psychomotor requirements. Psychomotor and people are correlated -.40 These correlations are larger, particular for people/ academic, than was found in Table 2 for the oblique relation of the DOT factors; those correlations were, respectively, .24, .05, and -.35. Thus the classification may exaggerate the relations among the competency dimensions somewhat.

Academic aptitude was divided into 4 rather than 3 levels because it is so important in distinguishing among jobs. The psychomotor and people dimensions were divided into 3 levels. The cutting points were chosen with 2 criteria in mind: that there be a reasonable number of occupations at each level of that dimension and that the range of scores represent

meaningful differences. The cutting points are shown in Table 7.

All occupations were then grouped into 36 categories according to their level on each of the dimensions (4 academic levels by 3 motor levels by 3 people levels = 36 groups). These groups are shown in Figure 1 and in more detail in Appendix C. Figure 1 shows that there are occupations in 34 of the 36 groups. Among "low academic" jobs, there are no jobs requiring high motor skills that also require workers to deal with people. This is a reflection of the fact noted earlier -- that jobs requiring a worker to deal with people generally do not require high motor skills. This combination of skills does exist, however, at higher academic ability levels.

It should be emphasized that there are occupations with almost all combinations of skills. There are jobs requiring high motor skills but low academic skills (e.g., jewelers) and vice versa (e.g., mathematicians). There are some jobs requiring high levels of one of the types of aptitudes but only low levels of the other two types of skills (e.g., authors are high on academic ability, personal service attendants are high on people, and jewelers are high on motor.) In short, there are jobs for almost all combinations of aptitudes. So, for example, if a youngster has only moderate academic aptitudes, there are still jobs available that will allow him or her to capitalize on high motor (e.g., radio repairman) or interpersonal skills (e.g., bill collector). And whether high or low in academic aptitude youngsters -- theoretically -- can avoid dealing with people or doing things with their hands (often using tools and machines) if that is their preference and instead emphasize activities that they prefer or are good at.

With some exceptions, the groupings of occupations seem to make sense. The competency profiles of these groups are discussed in the following section and help to provide a clearer understanding of the differences among the groups and the degree of homogeneity of the occupations within a group. Some occupations may be reassigned in the future so that the groups seem more sensible. For example, currently many apprentices are in different occupational groups than are the craftsmen to which they are apprenticed.

Charting the Specific Skills, Activities, and Working Conditions in Different Occupations

The classification is a guide for helping to focus attention on major requirements of jobs and for stimulating an evaluation of an individual's or group's current and desired skills. It may also help to narrow a person's attention to one or several groups of jobs that seem suitable and interesting. But there are still differences among and within these groups that are important considerations in career choice and preparation. Therefore, it is useful to supplement the classification with information about the specific activities occupations require and the working conditions they provide.

Appendices C through I provide such detailed information. The appendices list more specific information for both the groups and for the individual occupations within those groups. Most items in the DOT and PAQ have been arranged according to content. Appendix C provides information for academic abilities and mental activities; Appendix D for psychomotor abilities and motor tasks; Appendix E for dealing with people and interpersonal activities; Appendix F for other abilities, bipolar interests, and sources of information; Appendix G for responsibility, vigilance, and education and training; and Appendix H for working conditions. Appendix I provides information about the proportion of the work force employed in each of the occupational groups and gives the prestige level and Holland field of work for each occupation.

Three types of information are provided in the appendices.

(1) Correlations of each of the DOT and PAQ variables with the three major competency dimensions are shown. This information shows to what extent each variable is indicative of or linked to each of the competency

dimensions. These correlations are useful for several reasons. By comparing the correlations with the dimensions (which were constructed using marker variables rather than factor scores) with the factor loadings of those same variables on the analogous factors in the factor analyses, one can determine how similar the two ways of organizing the data are for describing the occupational world. One would hope that they would be quite similar, and this question is explored further below. In general, the information in the appendices duplicates the factor analysis of the DOT variables somewhat better than it does the factor analysis of both the PAQ and DOT variables together. These correlations are also useful because not all the variables were included in the factor analyses and it is only through these correlations that their relation to the major competency dimensions is revealed.

(2) Average scores on each variable were calculated for each group and translated into percentile scores. These percentiles indicate to what extent the jobs require the competencies in question relative to other occupations. For example, Appendix C indicates that on the average the Group 1 occupations require more verbal ability (VERBALDT) than only 2% of all occupations. Stated another way, Group 1 jobs almost always require less verbal ability than other occupations.

(3) Each individual occupation is marked as being either low (.), moderate (*), high (X), or missing (-) on the various scales. Cutting points for these level designations were based on the substantive meaning of the scale values shown in Appendix A. So, for example, the low designation (.) refers to scale values indicating that the attribute is of low importance, frequency, or applicability. Theseedesignations are useful because they provide some indication of the variability of requirements within the same occupational group, variability that is masked by the

percentile (which is based on an average score). In addition, these designations indicate roughly how important these attributes are in absolute rather than relative terms. For example, very few occupations require workers to entertain people, so a high percentile does not necessarily mean that there is much demand on the job for this activity.

The following pages first discuss the correlations of each set of variables with the three major competency dimensions. Profiles of each of the 34 occupational groups are then provided.

Correlations of Specific Abilities, Activities, and Job Conditions with the Three Major Competency Dimensions

Academic abilities (Appendix C). As already discussed, these are the major variables constituting the academic aptitude factor. They are essentially unrelated to the psychomotor factor. These abilities, particularly the verbal abilities, are related to dealing with people (r's of .3 to .5)

Mental activities (Appendix C). Most of these variables are highly correlated (.7) with the academic dimension and moderately (.5) with dealing with people: decision making, reasoning, planning, writing and compiling, combining, and analyzing information. Coding and transcribing information and doing work demanding precision and attention to detail are related to the academic dimension at a lower level. Most of these mental activities are somewhat negatively correlated with the motor aptitudes dimension.

Psychomotor abilities (Appendix D). Finger dexterity, manual dexterity, motor coordination, and complexity of dealing with things are highly correlated (.7 to .8) with the motor abilities factor, which is to be expected because the first three variables were summed to create that factor. As was also indicated in the factor analyses, form perception, spatial aptitude, and color discrimination are moderately correlated (.4 to .5) with this factor, though the former two are almost as highly

correlated with requirements for academic aptitude. Correlations with the people factor range from 0 to -.5.

Motor activities (Appendix D). These variables were all classified here as motor activities because they all involve physical activities or controlling machines. However, the correlations make clear that only a few of these dimension scores reflect psychomotor abilities. Performing controlled manual and related activities (DIM13), which of all the dimension scores should have reflected the motor aptitude factor, did indeed do so at a moderate level (r=.4). None of the other dimension scales did so. Two are related only to the vigilance factor that was discussed earlier (Table 6) but which was not used in constructing the occupational classification: controlling machines and processes (DIM11) and using miscellaneous equipment such as aircraft (DIM14). General physical coordination (DIM16) is related (negatively) only to the strength dimension. Apparently, exerting strength and the use of the body and body members in a coordinated fashion (e.g., limb movement without visual control) are not usually required by the same jobs, but neither has any particular relation to requirements for coordination and dexterity of the hands (the psychomotor factor here). General body movement (DIM10) and using machines and tools (DIM14) are associated with jobs requiring lower academic aptitude but skilled technical activities are associated with higher academic aptitude.

Thus, the psychomotor factor reflects a particular type of motor activity-primarily that involving the hands -- and most of the PAQ "dimensions" measuring motor activities are unrelated to the three factors used in the classification.

Deal with people (Appendix E). Dealing with people often means that contact is required on the job (REQCONT, r=.6) and that it is at a complex level (PEOPLE, r=.8). And as already noted, it tends to be associated with requirements for higher academic abilities.

Interpersonal activities (Appendix E). These activities suggest that, whereas some dealings with people are highly correlated with academic aptitudes, others are not. While the DOT variable DEPL (dealing with people) was used to define the people factor because it was less related to academic abilities than some of the other variables (e.g., PEOPLE), it is clear that it is a compromise between items more and less related to academic skills. Just like motor activities, there are actually several dimensions of interpersonal activities.

As was noted in the factor analysis of DOT and PAQ items, persuading, instructing, advising, negotiating, coordinating (but without line management authority, e.g., a social director), public speaking, and having staff functions (e.g., administrative assistant) are activities highly associated with jobs both requiring high academic aptitudes and occupations more often requiring dealings with people. Supervising non-employees (SUPERVIS) and entertaining people, catering to their needs, and dealing with the public (DIM21) are only weakly related to academic abilities and create two people-related factors independent of academic abilities when added to the factor analysis. DIM19, called performing supervisory/coordination activities, is also related to dealing with people but its meaning seemed unclear after examining more detailed results.

Other abilities (Appendix F). As was discussed earlier, four of these variables correlated either negatively (CLERICAL) or positively

(IFTCOOR, STRENGTH, EXERTION) with the strength factor. The two strength variables correlate negatively and clerical aptitude correlates positively with both the academic and people factors. As noted before, short-term memory is associated primarily with dealing with the public, a factor not shown here.

Bipolar interests (Appendix F). An interest in dealing with people and communication of ideas rather than with things and objects (IDATA) is characteristic of both the academic and people factors. The people factor is more highly associated than is the academic one with interests in business versus science (ISCIENCE), in social welfare versus machines (IMACH), and in esteem rather than productive satisfaction (IPRODUCT). In contrast, the academic factor is associated more highly with interest in creative versus routine work (ICREATE), and the psychomotor factor is associated with interests in machines (IMACH), things (IDATA), and productive satisfaction (IPRODUCT).

Sources of information (Appendix F). Occupations requiring high academic aptitudes or dealing with people both require more frequent use of written materials (WRITTEN), oral communications (VERBALPQ), or observation of behavior (BEHAVIOR), though the pattern differs somewhat for the two factors (written materials being more associated with academic aptitudes and observing behavior with the people factor). Use of quantitative and pictorial materials are moderately associated with the academic factor. As noted before, observation of events is associated with the vigilance factor not shown here.

The meaning of the DOT temperament FIF (feeling, ideas, or facts) is unclear and it is not associated with any of the three aptitude dimensions. The DOT temperament SJC (sensory or judgemental criteria)

is associated with both the academic and people dimensions and presumably reflects the need for judgment in the face of ambiguous information that is probably characteristic of much high-level work and work dealing with people.

Responsibility (Appendix G). Responsibility for the safety of others (RESPSAF, e.g., avoiding injuries to coworkers) and for material assets (RESPMAT) are unrelated to the three aptitude dimensions. General responsibility (RESPGEN) and criticality of the position (CRITICAL) are moderately positively correlated with both the academic and people dimension, but negatively with the psychomotor one.

Vigilance (Appendix G). These three variables are unrelated to the three major dimensions, which is not surprising because it was shown above (Table 6) that they form an independent dimension.

Education and training (Appendix G). Level of formal education (EDUCATN, GED) and length of non-academic training (SVP) are highly correlated (.8 to .9) with the academic factor, moderately (.3 to .5) with the people factor, and essentially not at all with the psychomotor one. (The PAQ variable TRAINING is almost the same in content as the DOT variable SVP, specific vocational training, but its correlations with the factors are lower.) The academic factor, and to a lesser extent the people factor, are also correlated with the need for job-related experience (EXPRNCE) and for keeping job knowledge current (UPDATE). Licensing, however, is most highly associated with dealing with people.

Working conditions (Appendix H). The working conditions listed here can be divided into two major groups: the amount of structure to the

job and the amount of stress induced by it. In general, lack of structure is most strongly related to the academic dimension: the greater the demands for academic aptitude, the greater the variety and change (VARCH), the less repetitious the work or continuous the workpace (REPETIT, REPCON, WORKPACE), and the less structured or supervised the activities (STRUCTUR, RECSUPER). Time pressure (TIMEPRES), however, is most highly (but only moderately) correlated with the academic factor. The same pattern of relations, only weaker, is found with the people factor, but the psychomotor factor is generally unrelated to these job conditions.

Having to work with set limits, tolerances, or standards (STS) is moderately associated with both psychomotor and people requirements (R's=.6, .5), but whereas the psychomotor factor is also positively associated with having measurable or verifiable criteria (MVC) for assessing work done, dealing with people means having <u>less</u> measurable or verifiable (i.e., more ambiguous) criteria.

Although the DOT variable PUS (performing under stress) is unrelated to any of the three factors, all the specific types of stress measured by the PAQ are moderately correlated with both the academic (usually about .5) and people dimensions (usually about .6): working under distractions (DISTRACT), in frustrating situations (FRUST), with strained personal contacts (STRAIN) or interpersonal conflict situations (CONFLICT), or having civic obligations (CIVICOB) or making personal sacrifices (SACRIFC). (The negative correlation with the psychomotor factor may be a function of its being negatively correlated with the people dimension, for it is not clear why jobs requiring less psychomotor skill should be more stressful in these terms.)

Non-job-required social contact (SOCCONT) is most associated with the people dimension, but it is fairly independent of all of them.

The patterns of correlations just discussed are consistent with the factor analyses performed earlier and with a few exceptions the patterns all make a great deal of sense. Thus, the DOT and PAQ data probably provide a fairly valid view of job competency patterns and their relation to other job attributes, a view that provides an organized and comprehensible description of job competency requirements and their associated activities.

The following discussion will use this view to examine occupations within different groups in the classification.

Profiles of Specific Occupations and Occupational Groups

Group 1: Low academic, low psychomotor, low people. (E.g., stock-handlers, chambermaids, dishwashers)

This group of occupations is the lowest in terms of academic aptitudes required (Appendix C). The percentiles for the average levels required range from only 2 to 7. Longshoremen, however, seem to require somewhat higher-level mental activities than do the other jobs in this group (decision-making, reasoning, planning, analyzing, and transcribing). Stockhandlers must make great use of written and quantitative materials but otherwise these occupations typically require only verbal sources of information and even that is low relative to other occupations (Appendix F).

These occupations, on the average, require high levels of general body movement (DIM10), handling (DIM15), use of machines, tools (DIM9) and miscellaneous equipment (DIM14), and controlling machines (DIM11), but they are low on all variables indicating dexterity (except manual dexterity, which is moderate) or coordination (Appendix D). They also

require greater strength than most occupations, though only longshoremen require great strength (Appendix F).

Requirements are high relative to other occupations for interests in things rather than ideas or people (IDATA) and for routine versus creative work (ICREATE, Appendix F). Consistent with this is the extremely repetitious and structured nature of the work (Appendix H). Nevertheless these workers must exercise a moderate level of vigilance and often have moderate responsibility for safety and materials (Appendix G). Longshoremen, in particular, have responsibility for the safety of others.

Dealings with people are extremely low, the lowest of all groups (Appendix E). Relative to other occupations, this group is average in catering to people's needs, though average means it is of only low importance on the job. Contact with the public is of moderate importance. However, personal stresses (e.g., working in frustrating or strained situations) are low (Appendix H).

Finally, education, training, and job experience requirements are the lowest of all groups (Appendix G). In summary, these jobs demand little but strength, a tolerance of repetitious work, and a moderate level of vigilance.

These occupations employ 2.6% of the workforce (Appendix I).

Group 2: Low academic, low psychomotor, moderate people. (E.g., deliverymen, crossing guards, servants)

This group averages around the 20th to 25th percentile in academic abilities, but somewhat lower on the mental activities (Appendix C). Even so, the deliverymen and crossing guards/bridge tenders do require

a moderate amount of planning, transcribing and (like most occupations) a considerable amount of attention to detail. Education and training requirements are low relative to other occupations (Appendix G).

The profile for motor abilities and activities is essentially the same as that for Group 1: considerable movement, handling, and use of equipment, but low dexterity and coordination compared to other occupational groups. These jobs also require moderate strength, but less than Group I (Appendix F). The need for vigilance, however, is fairly high (around the 75th percentile), particularly for the deliveryman and crossing guards/bridgetenders. Not surprisingly, these two occupations have higher than average responsibility for safety and materials and the work of the deliverymen is highly critical to the performance of their organizations (Appendix G). The use of the sources of information listed in Appendix F is low, except for the observation of events which is high for crossing guards/bridgetenders.

Dealings with people -- and with the public in particular -- are at a moderate level. Looking at particular activities, however, only the deliverymen have moderate requirements for persuading, instructing, negotiating, and catering to personal needs (Appendix E). Not surprisingly, the deliverymen also stand out in this group for having more distracting, frustrating, and strained job situations. One would expect ushers to share some of these strains, but no data were available for them.

Although these jobs have relatively high structure and repetition, they vary somewhat in what particular type of structure: for example, the deliverymen have highly cycled activities with high time pressure and the furniture finishers have a more repetitious work pace (Appendix H).

This group of jobs also requires a relatively high interest in routine versus creative work and in productive satisfaction rather than esteem (Appendix F).

In summary, these jobs are like those in Group 1 in terms of requirements for relatively unskilled physical activity, but they entail more dealings with people, more vigilance, and more responsibility. The jobs are not quite so routine, but still demand considerable tolerance or preference for repetitious and routine activities.

These jobs employ 1.8% of the workforce (Appendix I).

Group 3: Low academic, low psychomotor, high people. (E.g., parking attendants, baggage porters, elevator operators)

PAQ data are available for only two of the seven occupations (personal service attendants and elevator operators), so this group cannot be well described.

Requirements for academic skills are very low, between those of Groups 1 and 2 (Appendix C); so too are demands for motor aptitudes (Appendix D). But as with the previous two groups, this one appears to require considerable gross motor activity (Appendix D) and moderate physical strength or exertion (Appendix F).

Although dealings with people are frequent, they are only at a moderate level of complexity -- speaking/signaling, persuading, diverting (Appendix E). The little data available suggest that some of these jobs have moderate to high responsibility, but involve only extremely low requirements for vigilance.

These jobs also require considerable interest or tolerance for routine work, but more interest in social welfare rather than in machines in contrast to Groups 1 and 2 (Appendix F).

These jobs employ 0.6% of the workforce (Appendix I).

Group 4: Low academic, moderate psychomotor, low people. (E.g., bulldozer operators, assemblers, drill press operatives)

Most of the occupations in the first three groups are classified as service workers in the census scheme, particularly those in Group 3 that deal most with people. With increased demands for psychomotor skills in Group 4, most of the occupations are now machine operatives or, to a lesser extent, laborers or craftsmen.

Requirements for academic aptitudes and most mental activities are at or below the 20th percentile (Appendix C), but requirements for psychomotor aptitudes are moderate -- around the 40th to 50th percentiles on the average (Appendix D). Although this group is like the previous three (low psychomotor) groups in requiring considerable motor activity, use of machines, and strength, it differs because many of these occupations also require considerable controlled manual (D1M13) activities (Appendix D). There is considerable variation among the jobs in whether they involve skilled technical work (D1M12), but on the average this group is low relative to all others in this type of activity. Strength requirements are at the 75th percentile, generally at the "moderate" level (Appendix F). A high interest in machines rather than social welfare is required in almost all of the 74 occupations in this group.

Although many of the jobs require contact with the public (Appendix E) the level of involvement is quite low and almost none of the occupations have more than low demands for any interpersonal activities (except for D1M19 which, as noted before, is not readily interpretable). Interpersonal stresses are low (Appendix H).

Responsibility and vigilance vary, but are usually average relative to other groups of occupations (Appendix G). Duplicating machine operators, drill press operatives, and weavers require only low levels of responsibility and vigilance in contrast to locomotive engineers and stationary firemen who require high levels of both. Education and training demands are relatively low. Although the jobs vary from high to low in how repetitious and structured they are, on the average they are quite routine (Appendix H

In summary, these occupations are relatively low and homogeneous in their demands for academic aptitudes and mental and interpersonal activities. They are generally physically active jobs requiring hand dexterity and coordination, but particular motor activities and responsibilities vary considerably. They are routine jobs but they satisfy interests in working with things and machines. They also employ a very large proportion of the labor force -- 19.1% (Appendix I).

Group 5: Low academic, moderate psychomotor, moderate people (E.g., garage workers, taxi drivers, garbage collectors)

These 8 occupations are primarily laborers and transport equipment operatives in the census scheme. As a rule, very few operatives or craftsmen are found in the moderate-or high-people groups, even if high psychomotor skills are required.

These occupations are not particularly distinguished from the previous ones in the low level of academic aptitudes required, but they tend to require more writing and more combining and analyzing of information. Taxicab drivers, in particular, require a moderate level of a wide variety of mental activities. Both taxicab drivers and railroad brakemen appear to require considerable short-term memory as well (Appendix F). Group 5 occupations are about average in requirements

to use behavior, events, and oral communications as sources of job information (Appendix F). Requirements for using written, quantitative, patterns, or pictorial sources are lower than average. Education and training demands are low, but taxi drivers do need to be licensed (Appendix G).

Like the previous groups, these jobs require considerable physical activity and exertion (Appendices D and F), but the need to control machines (DlMll), exercise vigilance and take responsibility for the safety of others are fairly high on the average, particularly for taxi drivers (Appendices D and G).

Although contact with people is required by these jobs, it is of a fairly low level. Although these jobs are average (e.g., on persuading, advising, public speaking) or above average (e.g., on entertaining and catering to needs) on many of the interpersonal activities, these demands are of a fairly low level (Appendix E). (Jobs in general have low requirements for these interpersonal activities.) Correspondingly, these jobs have at least average interpersonal stresses, taxicab drivers experiencing the highest levels of stress (but only a moderate level) among these 8 occupations (Appendix H).

These jobs are less structured, but just about as repetitious as the previous groups of jobs (Appendix H) and so most require a preference or tolerance for routine rather than creative work (Appendix F).

In summary, these jobs are similar to Group 2 occupations in that they are distinguished from other low-level groups by greater requirements for vigilance and responsibility, perhaps because of their greater involvement with people. Although there is of course a greater demand for psychomotor skills, there is also a suggestion of somewhat higher demands for mental and interpersonal activities for some of the jobs in Group 5 compared to those in Group 2. Nevertheless, education and

training demands are still low. The interests required are also the same.

These occupations employ 1.5% of the work force (Appendix I).

Group 6: Low academic, moderate psychomotor, high people. (E.g., food counter and fountain workers, child care workers)

Only two occupations are found in this group, both of them being service workers in the census scheme.

Child care workers appear to have high demands for most of the mental activities but relatively low academic aptitude requirements (Appendix C). Behavior, events, and oral and written communications are all important sources of job information (Appendix F). In contrast, the food counter workers have no such demands for mental activity or information. Child care workers also have somewhat higher education and training demands demands and often require a license (Appendix H).

Although the DOT classifies child care workers as having contacts with people of only low complexity, the PAQ nevertheless classifies them as having high requirements for most interpersonal activities such as persuading, instructing, advising, and public speaking (Appendix E). (To some extent this apparent disagreement may result from the two sources of data rating different particular kinds of child care workers.) Once again, food counter workers have few such demands. Not surprisingly, child care workers also have greater interpersonal stresses, though both jobs require working under very distracting circumstances (Appendix H). The former also require considerable greater vigilance and more responsibility (Appendix G).

Both are quite active jobs involving a lot of handling (D1M15, Appendix D) and they require above average (but only moderate) strength or exertion (Appendix F). Demands for short-term memory are high for the

food workers.

The jobs are of moderate structure, though the type of structure varies. For example, child care workers must follow more set procedures, but food workers have a more specified workpace and greater time pressures (Appendix H).

In summary, the two occupations in this group differ considerably in the specific mental and interpersonal activities and responsibilities required of them, though they are similarly low in demands for academic aptitudes and moderate in both psychomotor aptitudes and in dealing with people. Both are physically active jobs of greater than average routine or repetition, and both require an interest in business rather than science.

These jobs employ only 0.4% of the work force (Appendix I).

Group 7: Low academic, high psychomotor, low people. (E.g., postal clerks, shoe repairmen, sewers and stitchers)

Most of these 7 occupations are craftsmen or operatives. PAQ data are available for only 3 of them, limiting the generalizations which can be drawn about the group.

These occupations are similarly low in academic aptitudes and above average in PAQ mental activities required (Appendix C). Demands for short-term memory are moderate, with only the postal clerks requiring high clerical aptitude (Appendix F). Educational requirements are low but training and experience required is high for a few of the occupations (Appendix C).

These jobs require few dealings with people, and require low (but no lower than average) interpersonal activities (at least those for which data were available, Appendix E). Interpersonal stresses and distractions are low but about average in relation to all

other groups (but higher than for Groups 1 to 4).

Compared to the other low-level groups, these occupations require less general physical activity (D1M10) and exertion or strength and greater use of machines, tools, and equipment (D1M19) as well as much higher psychomotor aptitudes. These greater skills do not appear to be translated, however, into a greater importance of controlled manual work (D1M13) as often appears to be the case (Appendices D and F). Vigilance and responsibility are average to above average for the occupations for which there are data (Appendix G). A high interest in machines and things is required in almost all these occupations (Appendix F).

These jobs are fairly structured and repetitious or continuous and almost all have high demands for set limits, tolerances, or standards (STS); postal clerks experience high time pressure (Appendix H).

In summary, these jobs are distinctive from all other low-level jobs in their demands for high psychomotor skills and greater use of machines. Demands for exertion tend to be lower on the average.

These jobs employ 1.9% of the work force (Appendix I).

Group 8: Low academic, high psychomotor, moderate people.

There are no occupations in this group.

Group 9: Low academic, high psychomotor, high people.

There are no occupations in this group.

Group 10: Moderate academic, low psychomotor, low people.

(proofreaders)

There is only one occupation in this group, proofreaders.

The occupation of proofreader demands high verbal skills but low mathematical aptitude (Appendix C). There is a high demand for precision and attention to detail, with average levels of the lower-level mental

activities (e.g., coding, transcribing) but low levels of the other mental activities. Education and training is moderate, but no higher than average (Appendix G).

Written sources of information and clerical aptitude are very important (Appendix F). Demands for short-term memory and quantitative sources of information are moderate. Dealings with people and interpersonal activities rival Group 1 for being extremely low (Appendix E). Interpersonal stresses are also low (Appendix H).

Demands for vigilance and responsibility for safety and materials are minimal, though general responsibility to the organization is moderate (Appendix G). Demands for physical exertion are extremely low (Appendix F). There is a fair amount of handling, but general physical activity is low (Appendix D). Use of machines and tools is very low (Appendix D), as are the demands for an interest in things versus data (Appendix F). An interest in routine work is required (Appendix F) because the job is quite repetitious and structured, with very little variety or change, and with high demands for set procedural standards (STS) and criteria for judging performance (MVC).

In summary, this job is quite distinctive for its high demands for precision and following set procedures as well as for its extreme lack of demands for physical and interpersonal activities. It is also unusual because it demands much higher verbal than mathematical aptitude.

This job employs 0.04% of the work force (Appendix I).

Group 11: Moderate academic, low psychomotor, moderate people. (E.g., library attendants, stock clerks and storekeepers, bartenders)

These occupations demand average to below average academic aptitude

and mental activities, with the exception of the mental activities more suggestive of clerical activities (compiling, coding, transcribing) which are somewhat above average. Although attention to detail is fairly typical, it is generally high (Appendix C). Demands for clerical aptitude and short-term memory are moderate but a bit above average (Appendix F).

Handling materials is above average, being particularly high for mail handlers and bartenders, but all other physical activities are moderate in level and average among all occupations (Appendix D). Only moderate exertion, nothing above average, is required (Appendix F). Demands for vigilance and responsibility are low relative to other occupations, although bartenders are critical to the performance of their organizations (Appendix G).

Bartenders are outstanding in this group in demands for catering to people's needs and dealing with the public (D1M21). The other occupations are low in requirements for the specific interpersonal activities listed, though they are average on most of them (Appendix E). Thus, like many occupations that require dealings with people, it is not at all clear from the PAQ and DOT data just what they do for or with people. These occupations do, however, require considerable use of written and oral sources of information, perhaps accounting for some of their dealings with people (Appendix F). Neither do these jobs require any particular interest either in business or social welfare. While these jobs have moderate or high distractions, all other interpersonal stresses are low (Appendix H).

Job structure is higher than average, but only moderate in level. Bartenders have somewhat less repetitious work but more set procedures to follow and greater time pressures.

In summary, most of these jobs seem to be low-level clerical jobs with a moderate component of handling the materials they work with. They deal with people to a moderate degree, but it may be largely for purposes of organizing work activities. When dealing with the public as bartenders do, this constitutes catering to people's needs. Responsibility is low, but not strikingly so, and job structure is high, but not strikingly so.

This group employs 2.5% of the work force (Appendix I).

Group 12: Moderate academic, low psychomotor, high people. (E.g., bill collectors, receptionists, guards and watchmen)

These 15 occupations tend to be what are called "boundary personnel" in other contexts, personnel who represent the organization to the public or deal with people outside the organization. Many of the jobs here are either service or clerical workers in the census scheme.

These occupations range from high to low in their demands for specific mental activities, but on the whole they are somewhat above average in these demands (Appendix C). Sheriffs, boarding house keepers, and hucksters have particularly high demands for activities such as deciding, reasoning, and planning. These particular occupations also require high use of written materials and observation of behavior (Appendix F). Clerical aptitudes and short-term memory are moderate for this group.

All these occupations have frequent dealings with people, but the nature of those activities varies (Appendix E). Housekeepers and hucksters cater to people's needs; these workers, together with railroad conductors, sheriffs and guards, also do a moderate amount of persuading, instructing and advising. But counter clerks, dispatchers, enumerators, receptionists and recreation attendants do little of any of these activities. Perhaps their activities are more routinized and less subject to resistance from

the people they deal with. Interpersonal stresses such as frustrating and strained interpersonal situations are, in fact, fewer in these latter occupations (Appendix H). Sheriffs and boarding house keepers appear to have the most personally stressful and demanding jobs in this group.

Demands for psychomotor skills are low, but demands for most motor activities are at least average (Appendix D). Housekeepers appear to have quite physically active jobs. Only low to moderate exertion is required of this group (Appendix F). Vigilance is high for railroad conductors, guards, and sheriffs. General and material responsibility is high for these three jobs as well as for the various types of housekeepers, with most of them being critical to the performance of their organizations (Appendix G). Education and training required is generally moderate, but railroad conductors and sheriffs require considerable job-related training and experience. Licensing requirements are above average for this group.

These occupations are characterized by a moderate amount of structure on the average, though there is variation from job to job (Appendix H). For example, railroad conductors have very repetitious, cycled activities requiring set procedures and meeting time schedules. In contrast, receptionists have few of these particular demands although the job is highly structured.

In summary, all these occupations have frequent dealings with people but they can be divided into highly-demanding versus less-demanding subgroups. The housekeepers, railroad conductors, sheriffs, and guards have higher demands for a variety mental and interpersonal activities, have greater responsibility, and suffer more stress in their dealings with people than do counter clerks, dispatchers, enumerators,

receptionists, recreation attendants, and even bill collectors. None are particularly demanding of academic or psychomotor aptitudes, but most are at least moderately physically active.

These occupations employ 2.1% of the work force (Appendix I).

Group 13: Moderate academic, moderate psychomotor,low people. (E.g., carpenters, compositers, auto mechanics)

Most of these occupations are classified as craftsmen in the census scheme; a smaller number are classified as clerical workers.

Group 13 is similar to Groups 11 and 12 in its somewhat below average demands for academic aptitude (Appendix C). Most demands for mental activities are also somewhat below average, making them lower than those of Group 12 (that dealt more with people but less with psychomotor skills) but quite similar to Group 7 (that required lower academic but higher psychomotor aptitude).

These occupations demand somewhat higher than average psychomotor aptitudes and are considerably higher (at the 70th percentile) than the previous groups in complexity of involvement with things (Appendix D). Most operate or set up machines or do precision working, the highest levels of involvement with things. There is moderate to heavy use of machines and tools (D1M9), controlling machines and processes (D1M11), and controlled manual work (D1M13). General body movement (D1M10), an interest in machines, level of exertion, and use of patterns as a source of information (Appendix F) are also above average, the first two usually being quite high. Demands for vigilance and responsibility are only average, though most mechanics have high responsibility for materials (Appendix G). Many of the occupations require long training times and about half require considerable prior job-related experience, but it is not clear that the demands for the group as a whole are above average.

Demands for most interpersonal activities are low, but they are not much below average because jobs in general require little such activity (Appendix E). Likewise, interpersonal stresses are low but not much below average (Appendix H). These jobs are moderate in degree of overall job structure and repetition, but most have set standards for performing (STS) and evaluating (MVC) work (Appendix H).

In summary, these occupations are similar to their counterparts at a lower academic level (Group 4) in their lack of involvement with people and in their satisfaction of interests in machines and objects, but they are less structured, have more demands for various interpersonal and mental activities, higher educational and training requirements, and a more complex involvement with things. Thus the work demands a somewhat greater variety of skills and opportunity to structure one's own activities.

These occupations employ 8.3% of the work force (Appendix I).

Group 4: Moderate academic, moderate psychomotor, moderate people. (E.g., mail carriers, plumbers, dental assistants)

Occupations in this group come from a variety of census groups, though most often from craftsmen.

These jobs are at least average in demands for all academic and clerical aptitudes and mental activities (Appendix C). Psychomotor aptitudes and motor activities are generally somewhat above average (Appendix D), with most jobs requiring moderate to high levels of general body movements (D1M10) or coordination (D1M16) and activities with the hands (D1M15, D1M13) or machines (D1M9, D1M11, D1M14). Demands for vigilance and responsibility are somewhat above average (Appendix G). A few of the occupations (electrotypers, power station operators, health aides, and firemen) have particularly high responsibility. Education and training are at least average, with many of the jobs having long training times (Appendix G).

Interpersonal activities are generally low, but above average (Appendix E). Firemen require moderate levels of persuading, instructing, advising, negotiating, and coordinating; athletes and health aides require moderate levels of the first three of these; but other occupations require less. Firemen also have the most (moderately) interpersonally stressful of these jobs (Appendix H).

In summary, this group seems remarkable only for its moderate demands in all areas examined. A few particular occupations such as firemen have more marked responsibility and stress.

These occupations employ 4.3% of the work force (Appendix I).

Group 15: Moderate academic, moderate psychomotor, high people. (E.g., telephone operators, bus drivers, waiters)

These occupations, which are from a variety of census groups, require average academic aptitudes. They are fairly average in demands for the various mental activities, except in demands for precision and attention to detail which are below average (though high for a few occupations, Appendix C). Clerical aptitudes are moderate, just a bit above average (Appendix F).

Psychomotor aptitudes, motor activities, and level of exertion are uniformly average on the whole, though there are higher than average demands for controlling machines (D1M11, Appendices D and F). Practical nurses appear to have the highest demands for motor activity of these jobs, though their motor skill requirements are the same. Demands for vigilance are a bit above average for the group, but the individual occupations range from low (e.g., sales clerks and waiters) to high (e.g., bus drivers and practical nurses, Appendix G).

Dealings with people are high, though the particular interpersonal

activities required differ from job to job (Appendix E). Waiters must do some persuading and a lot of catering to people's needs; practical nurses must also, but they also do a lot of instructing and some advising, negotiating, and supervising of non-employees. Retail salesmen must do a lot of persuading and some instructing and advising; in contrast, telephone operators who also must deal extensively with the public do none of these interpersonal activities to any extent. Not surprisingly, these Group 15 occupations rely to a relatively high extent on behavior and events as sources of job information (Appendix F). Interpersonal stresses are somewhat above average, but generally they are only low to moderate (Appendix H). Responsibility, however, is high for some of these occupations: safety for bus drivers and practical nurses, and materials for foremen and bus drivers (Appendix G).

This group is different than most the previous ones in the consistency of interests in people it requires. It is quite above average in interests in social welfare versus machines, business versus science, people and data versus machines, and esteem versus productive satisfaction (Appendix F). These workers are not required to be particularly interested in either routine or creative work, because the work is generally not highly structured or repetitious, though that does vary from job to job as does the type of structure involved (Appendix H). Education and training demands are usually moderate, though the amount of job experience required varies considerably and the need to update job knowledge is high in a few occupations (Appendix G).

In summary, these occupations are uniformly moderate in academic and psychomotor skills and activities, but range widely in the specific interpersonal activities, responsibilities, and job conditions they experience.

Much like Group 12, this group stands out from the low-level jobs dealing with people in its consistent requirements for interests in people, business, and social welfare versus things, objects, machines, and productive satisfaction. And this is so despite the fact, unlike Group 12, it does deal with some machines to a greater than average extent and requires moderate psychomotor skills.

These occupations employ 9.2% of the work force (Appendix I).

Group 16: Moderate academic, high psychomotor, low people. (E.g., cabinet makers, photoengravers, tool and die makers)

This group consists primarily of craftsmen.

These occupations are average in academic aptitudes required, but their profile of verbal versus mathematical aptitudes illustrates an interesting trend within both the moderate- and high-academic strata of occupations (Appendix C). Group 16 has requirements for math aptitude (MATHDOT, NUM) that are relatively higher than those for verbal aptitude (VERBAL, LANG); the percentiles are, respectively, in the 50's for math but only the 40's for verbal. This predominance of math requirements is true for 4 of the 5 groups with low dealings with people and with low to moderate academic requirements (Groups 13, 16, 22, and 25). The reverse pattern is found for the groups with high dealings with people (Groups 12, 21, 27 and perhaps 15 and 18), verbal abilities being higher than math ones.

Demands for the mental activities are average or below (Appendix C). A few occupations have high demands for decision making and reasoning (aircraft mechanics, pattern and model makers), but otherwise demands are only low to moderate. Like most other groups, precision and detail are important. Written, quantitative, and oral sources of information are of average importance, but use of patterns is much higher than average

(primarily because of the demands of pattern and model makers and of photo-engravers), as is the use of pictorial materials (Appendix F). Events and behavior are relatively unimportant probably because these occupations have relatively little to do with controlling machines or dealing with people (Appendices D and E). And consistent with this, there are only low demands for vigilance (Appendix G).

Demands for all psychomotor aptitudes are very high relative to other occupations, generally from the 80th to 90th percentiles (Appendix D). Manual dexterity, form perception, and spatial aptitude are high for most of the 21 occupations in this group. Controlled manual activities (D1M13) are particularly important among the motor activities, with less emphasis (an average level) on general body movement (D1M10), and relatively little handling (D1M16), controlling machines (D1M11), or using miscellaneous equipment (D1M14). Level of exertion is generally moderate (Appendix F). The mechanic with his hand tools represents well the type of motor activities carried out in this group. Most of the occupations clearly stress productive satisfaction rather than esteem (IPRODUCT) and an interest in processes, machines, or techniques versus social welfare (IMACH, Appendix F).

This group is below average in dealings with people, seldom having more than a low requirement for any of the interpersonal activities (Appendix E). And although some of the occupations involve working under moderate distractions, there are seldom any interpersonal stresses (Appendix H).

Amount of structure and repetition is average. The jobs are, however, almost always high in requirements for set limits and standards (STS) for performing work and in having measurable and verifiable criteria (MVC) for evaluating it.

In summary, this is a set of jobs homogeneous in its clear standards for how work must be performed; the skilled use of the hands in working with tools, machines, or equipment; the enjoyment of productive satisfaction; and the lack of demands for dealing with people. Mathematical and spatial aptitudes are more important than verbal ones.

This group employs 3.3% of the work force (Appendix I).

Group 17: Moderate academic, high psychomotor, moderate people. (E.g., stenographers, electricians, drywall installers)

Although these 4 occupations of course share common demands along the three major competency dimensions, their particular job demands seem quite different. Nor is it clear that they are particularly different in their activities than the occupations in Group 16.

Stenographers require higher verbal and clerical aptitudes than the other occupations in this group, as well as greater finger dexterity and hand-related motor coordination and use of written sources of information (Appendices C, D, and F). In contrast, electricians require greater manual dexterity, spatial aptitude, and use of pictorial materials (Appendices D and E), and drywall installers and brickmason apprentices require greater strength (Appendix F).

Mental and interpersonal activities are not distinctive for any of the three occupations for which there are PAQ data (Appendices C and E). Motor activities are, however (Appendix D). For example, general body movement (D1M10) is low for stenographers, moderate for electricians, and high for brickmasons apprentices. The remaining motor activities also differ across the three occupations.

All four occupations require an interest in machines, processes, or techniques rather than social welfare (Appendix F). All are subject to

set limits or standards (STS) and all but stenographers have measurable criteria for their work (MVC). Otherwise, the jobs seem to be only moderately structured on the average and not particularly stressful (Appendix H).

In summary, these jobs are similar in the general competencies and interests required and in job structure. Although they deal with people to a moderate extent, it is not really clear what those dealings consist of. Although their motor skills are all moderate on the average, the particular aptitudes required and motor activities performed are different. This is a heterogeneous group not easily described.

This group employs 0.8% of the work force (Appendix I).

Group 18: Moderate academic, high psychomotor, high people. (E.g., barbers, hairdressers, and cosmotologists, personal service apprentices)

Four of these 5 occupations are service workers in the census classification. PAQ data are available for only 2 of the 5 occupations, so little can be said about this group.

These occupations require somewhat below average academic aptitudes (Appendix C), but higher than average (though generally only moderate) psychomotor skills (Appendix D). They have much dealing with people, but it is generally only at a low level (e.g., serving, Appendix E). Demands for clerical abilities range from high (clerical assistants) to low (hairdressers, personal service apprentices), and lower than average (generally only low to moderate) physical exertion is required (Appendix F). The work appears to have somewhat less than average structure (Appendix H), and sometimes even seems to require an interest in creative rather than routine work (barbers, personal service apprentices, Appendix F). This

group generally requires an interest in social welfare rather than machines and processes and in all cases an interest in business rather than science.

These occupations employ 0.9% of the work force (Appendix I).

Group 19: High academic, low psychomotor, low people. (E.g., political scientists, numerical control tool programmers, authors)

There are only 3 occupations in this group, all of them professionals in the census scheme. PAQ information is available for only one of the occupations.

On the average, these occupations require above average academic abilities, though they vary from high (political scientists, tool programmers) to low (authors) in math aptitude required (Appendix C). Demands for psychomotor abilities are extremely low, lower for than any previous group, with the exception of tool programmers, who require high levels of form perception and spatial aptitude (Appendix D). These occupations deal with things at the lowest level of complexity (the zero percentile). Dealings with people are below average, but are of moderate complexity (Appendix E). Clerical aptitudes range from moderate to high (political scientists) and demands for strength or exertion are extremely low (Appendix F). High levels of both education and training are required (Appendix G). The interests required vary somewhat; political scientists require an interest in science and creative work, tool programmers in science, machines, and productive satisfaction, and authors in data and people versus things and in creative work (Appendix F). This group differs from the previous ones primarily because it is higher in academic abilities and training required and because it is very much lower in demands for

psychomotor skills and exertion.

These occupations employ 0.04% of the work force (Appendix I).

Group 20: High academic, low psychomotor, moderate people. (E.g., librarians, construction inspectors, estimators and investigators)

These 4 occupations are found in the professional, managerial, and clerical census groups.

As with all the groups requiring high or very high academic abilities, these occupations also require high intelligence and complex dealings with data such as analyzing, coordinating, and synthesizing data (Appendix C). Occupations requiring only low to moderate academic abilities rarely require more than computing and compiling data. The mental activities required differ from one occupation to another in this group, but all require moderate to high levels of each of the activities and the group as a whole is above average in such requirements. Librarians require high levels of planning and deciding and some of the inspectors require high levels of compiling, combining, and transcribing data.

Dealings with people are required and above average, but of only moderate complexity (Appendix E). The particular interpersonal activities are similar across the occupations, and they tend to require moderate to high levels of persuading, instructing, and advising. Interpersonal stresses are definitely above average for the group as a whole, with the inspectors, except construction, facing high levels of distraction, frustration, and strained and conflict-ridden personal contacts (Appendix H). The librarians and estimators face only low stresses.

Sources of job information vary, but all 4 make moderate to high use of written and oral communications and quantitative materials (Appendix F).

The inspectors also make moderate to high use of events and pictorial materials. Requirements for clerical aptitude and short-term memory are above average and at least moderate in magnitude.

The psychomotor skills of finger dexterity, manual dexterity, and motor coordination are low, but demands for form perception and spatial aptitudes are average and moderate in level (Appendix D). As was noted in an earlier section, form perception and spatial aptitudes are moderately correlated with the academic as well as the psychomotor competency dimensions. All hand-related activities are relatively low--controlled manual activities (D1M13), handling (D1M15), and use of tools or equipment (D1M9, D1M14). However, these jobs often involve considerable controlling of machines (D1M11) and skilled technical activity (D1M12).

Demands for vigilance are average overall, and range from low (librarians, estimators) to moderate (the 2 types of inspectors, Appendix G). General responsibility is high, with the inspectors being particularly critical to the performance of their organizations. It is also important for the inspectors to update their job knowledge. As with many occupations requiring moderate academic aptitudes and with most occupations requiring higher academic abilities, these jobs require long (over one year's) job training (SVP).

These 4 jobs are not repetitious, nor is the work pace set, but they are only moderately structured (Appendix H). Procedures are fairly well set and time pressure is generally moderate.

In summary, the 4 jobs require high academic aptitudes, intelligence, and general responsibility, as well as moderate to high levels of the mental activities such as planning and analyzing data. The inspectors

stand out from the other 2 occupations in this group by facing greater interpersonal stresses and needs for vigilance and updating job knowledge. Hand-related aptitudes and activities are low, but much of the work (primarily the inspectors') is considered skilled technical work and requires spatial aptitude and form perception. Thus, the psychomotor skills and activities required tend to be more analytical than is the case with the previous groups required. No particular interests in people are required and the moderate dealings with people seem to be for the purpose of completing the more analytical (e.g., inspection) activities.

These occupations employ 0.6% of the labor force (Appendix I).

Group 21: High academic, low psychomotor, high people. (E.g., social workers, buyers, sales representatives)

These 30 occupations are mostly professional, managerial (including farm), or sales workers.

As noted earlier, this group has relatively higher requirements for verbal than math aptitude; percentiles for the former are in the 70's and for the latter are in the 60's (Appendix C). Most of these occupations have high requirements for the mental activities of decision making, reasoning, and planning. Demands for combining, analyzing, and compiling data and for writing are either moderate to high and are definitely above average on the whole.

Dealings with people are at a highly complex level for most of the professionals (i.e., supervising, instructing, negotiating, mentoring) but at only a moderately complex level (e.g., persuading and diverting) according to the DOT estimate (PEOPLE) for the remaining occupations (Appendix E). Looking at specific interpersonal activities measured by the PAQ, most of the occupations have moderate to high levels on almost

all these activities and the percentiles are generally in the 70's and 80's. The clerical (e.g., ticket agents) and service workers (e.g., stewardesses) in this group tend to have lower interpersonal requirements. Although professionals, managers, and sales workers in this group all do a fair amount of persuading, instructing, advising, and negotiating, only the professionals have substantial involvement in supervising non-employees and in coordinating people (without line management authority).

Not surprisingly, written and oral communications and observations of behavior are important sources of job information (Appendix F), and high interests in data or people versus things are required (Appendix F). With the exception of most of the professional workers, these occupations require an interest in business; the professional workers tend to require interests in social welfare. Interpersonal strains are relatively high (with percentiles around 80), particularly for elementary teachers and policemen (Appendix H). Demands for vigilance are average, but for responsibility and updating job information, they are above average. Most of the professionals, managers, sales workers, and policemen have high general responsibility and are critical to the performance of their organizations (Appendix G). Managerial workers also have high responsibility for material assets.

All psychomotor aptitudes are low (Appendix D). Demands for exertion are below average and are generally low to moderate. Most motor activities are generally moderate, although elementary teachers and stewardesses require a lot of general body movement as well as several other activities.

These occupations, particularly the professional, managerial, and sales ones, tend to be only loosely structured (Appendix H). Time

pressure is at least moderate, but the work pace and procedures (STS) are not set, the work is not repetitious, and the supervision required is relatively low. However, no particular interest in creative work seems to be required (Appendix F). Moderate to high levels of education and training are required.

In summary, this group seems distinctive from previous ones discussed, not only because it has high requirements for both academic and interpersonal aptitudes and activities, but also because it is considerably less structured and gives workers much more discretion in determining when and how the work is done even though their performance is often critical to the performance of their organizations.

These occupations employ a sizeable proportion of the labor force--7.0% (Appendix I).

Group 22: High academic, moderate psychomotor, low people. (E.g., chemical technicians, surveyors, bookkeepers)

Three of these 4 occupations are professional workers in the census scheme, most of them being technicians.

These occupations require relatively higher math than verbal ability; percentiles are, respectively, in the 80's and 60's for math and verbal aptitudes (Appendix C). Requirements for decision making, reasoning, planning, combining, and analyzing are moderate and generally somewhat above average. Compiling and transcribing data are also generally moderate but are above average. Use of pictorial materials is very high at the 92nd percentile, and use of written and oral communications is also high; observation of behavior and events is not important (Appendix F).

Psychomotor aptitudes are definitely above average, with demands for form perception usually being high. All but the surveyors have highly

complex dealings with things, though this is not much above the average (Appendix D). Except for bookkeepers, the work is considered highly skilled technical work (D1M12). General activity and manual activities are about average, but the technicians make considerable use of tools, machines, and equipment (D1M9). Demands for vigilance are moderate for the surveyors and technicians, and all but the surveyors have only moderate responsibility (Appendix G). Demands for exertion or strength are below average and demands for clerical aptitude above average, particularly for the bookkeeper (Appendix F).

Dealings with people and demands for almost all interpersonal activities are low (Appendix E). Interpersonal stresses are below average (Appendix H).

Job structure and repetition are moderate, but there are set standards for performing (STS) and evaluating (MVC) work (Appendix H). Except for bookkeepers, the work demands an interest in science and in machines, techniques, or processes rather than social welfare (Appendix F).

In summary, this work is highly quantitative and has little to do with people. Although the work deals at a complex level with things, it is of a very technical, scientific nature rather than of a very mechanical and manually manipulative one. Bookkeepers break from this pattern by having work of a more clerical and less scientific nature.

These occupations employ 2.4% of the work force (Appendix I).

Group 23: High academic, moderate psychomotor, moderate people. (E.g., industrial engineering technicians, dancers, payroll and time keeping clerks)

With the exception of the payroll clerks, this seemingly heterogeneous group of 6 occupations is found in the professional group in the census scheme. Only 4 of the 6 have PAQ data.

These occupations generally require moderate but above average (around the 70th percentile) academic aptitudes (Appendix C). The same statement can be made about the mental activities with the exception of air traffic controllers. This occupation requires high levels of decision making, reasoning, planning, and combining information.

Demands for psychomotor aptitudes are generally moderate and about average (Appendix D) and demands for exertion below average (Appendix F). Spatial aptitude and complexity of involvement with things range from high to low depending on the occupation. The pattern of motor activities required also varies among the 4 occupations for which there are PAQ data. For example, use of machines, tools, or equipment (DIM9) ranges from high (air traffic controllers and photographers) to low (payroll clerks); handling (DIM15) also varies from high (photographers) to low (air traffic controllers). Clerical aptitude, eye-hand-foot coordination (IFTCOOR), needs for vigilance and responsibility also show similar variation (Appendices F and G). As would be expected, the air traffic controllers have high demands for vigilance and responsibility in contrast to the other occupations. Sources of job information vary. Air traffic controllers depend heavily on written, oral, and pictorial information as well as on the observation of events; payroll clerks depend on written, quantitative, and oral sources, but on none of the others.

Dealings with people are moderate, but range from high (dancers) to low (photographers and some of the technicians) in complexity (Appendix D). Demands for all interpersonal activities are low except for air traffic controllers (who do persuading, negotiating, advising, and a lot of instructing) and photographers (who do some instructing and advising).

Workers in the 4 occupations for which there are PAQ data work under moderate distractions (Appendix H), but interpersonal stresses are low except for the air traffic controllers (who also had the most interpersonal activities).

Job structure varies among the jobs, some being very loosely structured (air traffic controllers) or having high time pressures (air traffic controllers, photographers, Appendix H). Interests in data versus things, people versus machines, creative versus routine work, and productive satisfaction versus esteem also vary widely but in patterns that would be expected (Appendix F).

In summary, this group is extremely heterogeneous in activities, interests, and responsibilities required. It seems to be more of a catch-all group than anything else.

These occupations employ 0.4% of the work force (Appendix I).

Group 24: High academic, moderate psychomotor, high people. (E.g., home management advisors, adult education teachers, ship officers)

Five of these 9 occupations are professional workers.

Academic aptitudes are around the 70th percentile of all occupations, as are most of the more highly academically-related mental activities (deciding, reasoning, planning, combining, and writing, Appendix C). The two teachers for which there are data and home management advisors are particularly high on these mental activities. The teachers and home management advisors also have the most complex dealings with people (Appendix E) and, specifically, have high demands for instructing and persuading. Teacher aides have lower requirements for interpersonal activities, though they do have moderate demands for instructing, coordinating, and supervising non-employees. Cashiers have only low

interpersonal demands; presumably their dealings with people are very routinized (as is suggested by the high degree of structure of their jobs, Appendix H) and demand little in the way of interpersonal skills and activities. This is in clear contrast to the teachers and home advisors who have moderately to loosely structured jobs and more stressful and responsible ones (Appendices G and H). Likewise, written, oral, pictorial, and behavioral sources of information are less important to cashiers than to the other occupations (Appendix F). The health technologists fall between the cashiers and the other occupations in demands for interpersonal activities. Several of the occupations (adult education teachers and teacher aides) appear to require an interest in social welfare, and most require at least an interest in data and people versus things (Appendix F). Some (but not the teachers) require an interest in business.

Psychomotor aptitudes are generally moderate and average, with the exception of high demands for form perception and spatial aptitude required of health technologists, adult education teachers, and ship officers (Appendix D). Most psychomotor activities are average to above average, though the pattern differs for specific occupations. The exertion demanded is low to moderate and only around the 30th percentile (Appendix F).

In summary, the teaching jobs have high academic and interpersonal demands, higher than those of the technologists, cashiers, and teacher aides in this group, even though they all have extensive dealings with people. A few of these occupations have high demands for form perception and spatial aptitude, but are otherwise moderate in psychomotor demands. Interests vary somewhat, but are generally people-related. Most of the

jobs are loosely structured but only the art teachers require an interest in creative work.

These occupations employ 1.7% of the work force (Appendix I).

Group 25: High academic, high psychomotor, low people. (E.g., radio operators, machinists, carpet installers)

This group includes 15 titles most of which are craftsmen or technical workers in the professional category.

Verbal abilities are around the 60th percentile and math abilities around the 70th, and all such demands tend to be moderate rather than high in magnitude (Appendix C). In contrast to the other "high academic" groups already discussed, demands for mental activites, particularly the higher level ones (e.g., deciding, reasoning, planning, combining data), are below average with most percentiles in the 30's and 40's. The demands for mental activities are more similar to the moderate academic groups (where most craftsmen are found) than the high ability ones. The technical workers in the professional category (electrical and mechanical technicians, radio operators) have higher demands for mental activities than do the craftsmen and crafts apprentices in this group.

All but the tailors in this group have complex dealings with things--operating, controlling, or setting up machines or doing precision work (Appendix D). And most of the occupations require high spatial aptitude, use of tools or equipment (D1M9), and controlled manual activities (D1M13). The crafts workers appear to require particularly high levels of manual dexterity. Most of the jobs require only low to moderate handling (D1M15), general body movement (D1M10), and exertion (Appendices D and F).

Written and oral sources of information are the most important, though not above average for occupations in general (Appendix F). Use of pictorial and quantitative information is generally at least moderate and above average, but observation of behavior and events is unimportant (Appendix F). This is consistent with the very low level of involvement this group has with people (Appendix E). Demands for the interpersonal activities are almost always low, and the jobs are not stressful in personal terms (Appendix H). Demands for vigilance are moderate at most and responsibility is generally below average (Appendix G).

Unlike many of the high academic ability groups, these Group 25 occupations are fairly structured and repetitious (Appendix H). Work pace and work standards and procedures are set. Demands for training are relatively more important than those for formal education (Appendix G).

In summary, these occupations all involve an interest in and working with machines, processes, or techniques and involve relatively higher quantitative and spatial than verbal skills. Although apparently requiring higher than average academic aptitudes, these jobs do not make many demands for the specific mental activities measured by the PAQ. Of the two subgroups of occupations in this group, the crafts workers require less of the mental activities than do the other workers (e.g., technicians, radio operators). There is minimal involvement with people. This group is very similar to the moderate academic level Group 16 occupations, which also require high psychomotor but low people aptitudes and most of whom are also craftsmen. It is fairly skilled technical or mechanical work with fixed standards emphasizing quantitative rather than verbal skills but without much responsibility or interpersonal stress. The main difference between the groups is apparently in the general level

of academic ability or intelligence required.

These Group 25 occupations employ 1.1% of the labor force (Appendix I).

Group 26: High academic, high psychomotor, moderate people. (E.g., designers, millwrights)

There are only 2 occupations in this group and only one has PAQ data available.

Academic aptitudes, particularly the mathematical ones, are above average for these 2 occupations, and the millwrights (for whom PAQ data are available) require average levels of decision-making, reasoning, planning, and analyzing (Appendix C).

Psychomotor abilities differ somewhat, with finger dexterity and form perception being high for designers but manual dexterity high for millwrights (Appendix D). Both, however, require high spatial aptitude and complex involvement with things. The millwrights are moderate on all motor activities except for controlled manual activities (D1M13) and use of tools, machines, and equipment (D1M11) which are high. Demands for exertion or strength are low for designers but moderate to high for millwrights (Appendix F). Although little data are available about the job structure of designers, it appears that their job is differently structured than that of the millwrights. The millwrights do not have set standards and criteria for their work (Appendix H). In contrast, designers do not have set criteria and instead must rely on more ambiguous criteria to guide their work (i.e., on feelings, ideas, or facts, FIF, or on sensory or judgmental criteria, SJC) and must be interested in creative work (Appendix F).

Dealings with people are moderate, but it is not clear what they consist of; there are no data for the designers and the millwrights do

some instructing and rely on oral communications in their work but otherwise appear to have few interpersonal activities (Appendix E). Interpersonal stresses are low (Appendix H).

In summary, although these 2 occupations are similar in general competency levels required in the three major areas, the jobs seem to differ in specific requirements. Both stress complex dealings with things, but the designers have more ambiguous standards and creative jobs than do the millwrights who in turn seem to be more similar to the highly skilled craftsmen in motor activities and job structure.

These 2 occupations employ 0.2% of the labor force (Appendix I).

Group 27: High academic, high psychomotor, high people. (E.g., kindergarten teachers, bank tellers, secretaries)

Four of these occupations are professionals and 4 are clerical workers in the census scheme.

These occupations require high verbal aptitudes (percentiles in the 70's) but only moderate math aptitudes (percentiles in the 50's); this is opposite to the pattern found in the last 2 groups also requiring high academic and motor aptitudes but lower dealings with people (Appendix C). The college coaches and physical education teachers, in particular, require only low math aptitude. Only one of the 4 professional workers, kindergarten teachers, has PAQ data and those data show that this occupation requires high levels of almost all the mental activities (decision making, reasoning, planning, writing, and combining, compiling, and analyzing information). The clerical workers in this group require only low to moderate levels of these activities, though demands for transcribing information are sometimes high. The bank tellers and secretaries also require high clerical aptitude (Appendix F).

Psychomotor demands, particularly for finger dexterity and motor coordination, are nigh for all occupations except the kindergarten teachers (Appendix D). The clerical workers work at a complex level with things but require little spatial aptitude and form perception whereas the pattern is pretty much reversed for the professional workers. The kindergarten teachers are physically active (D1M10), whereas the secretaries are not, and the professional workers require moderate exertion whereas the clerical workers require little (Appendix F).

When interpersonal activities are considered (Appendix E), the professional and clerical workers are once again split into 2 differing groups. The former generally deal with people at a complex level (e.g., supervising, instructing, negotiating, mentoring), whereas the latter do not (e.g., speaking - signaling, persuading). The PAQ data for kindergarten teachers versus the clerical workers dramatically confirm this. Correspondingly, kindergarten teachers use information from observing behavior and events (as well as written and oral sources of information) but the tellers and secretaries do not (Appendix F), and the teachers face considerably more interpersonal stresses (Appendix H) and demands for vigilance and responsibility (Appendix G). Interests in social welfare (IMACH) are required of the professionals but interests in business are required of the clerical workers (Appendix F).

Job structure and repetition are generally low to moderate, but the clerical workers do have set limits, tolerances, or standards for their work (Appendix H). The work demands neither an interest in creative nor routine work.

In summary, although these occupations require both high psychomotor skills and dealing with people, the interests required are clearly more

people related than they are machines or things oriented. In particular, bank tellers and secretaries use machines and equipment but the interests demanded apparently are for business rather than machines and processes. The professional workers require more mental activities, interpersonal activities, interest in social welfare, and responsibility but less complex involvement with things. Presumably this difference between the subgroups appears despite similar demands for psychomotor skills because the professionals all work with people's bodies, whereas the clerical workers manipulate machines.

These occupations employ 4.1% of the labor force (Appendix I).

Group 28: Very high academic, low psychomotor, low people. (E.g., computer programmers, statisticians, social scientists)

The occupations in the very high academic groups are primarily professional workers in the census scheme; one group also includes a number of managerial and sales workers. Many of the occupations in the high academic stratum did not require college degrees, but most of those in this very high group do require a BA or higher. Most of the workers who provide those degrees, college and university teachers, would be in this very high academic stratum, but data are not available to examine them. Almost all occupations in the 9 very high academic groups require high verbal abilities, generally averaging the 90th percentile or above, and most require high levels of math, education, and training.

Turning back to Group 28 in particular, these 8 occupations generally require high levels of all the mental activities except the more clerical ones of coding and transcribing (Appendix C). The percentiles are in the 80's and 90's, thus placing this group (like most of those to follow) above the previous groups which required lower academic aptitude. Math

aptitudes average just about the highest of any of the 34 occupational groups, rivaled only by 3 groups of engineers and scientists (Groups 31, 32, and 34).

Most of these jobs require high clerical and spatial aptitudes, but are very low in psychomotor aptitudes, exertion, and general body movement (D1M10) required (Appendices D and F). Generally, these occupations do not require the use of tools, machines, or equipment (D1M9) except for miscellaneous equipment (D1M14) or even a moderately complex relationship with things.

Dealings with people are few, but of a moderate level of complexity when they occur (Appendix E). Advising and having staff functions are the most frequent interpersonal activities; supervising non-employees is unimportant and there are extremely low dealings with the public (9th percentile). Sociologists (non-academic sociologists) have the most interpersonal activities because they have high demands for persuading, instructing, advising, negotiating, and coordinating (without line management authority); actuaries are at least moderate in demands for all these activities but the other occupations have lower demands. Except for the sociologists, interpersonal stresses are low, though most of these occupations work under at least moderate distractions (Appendix A).

Observation of behavior and events is important only to the sociologists, but written, quantitative, and oral information are important to almost all these occupations. Responsibility for safety is low, responsibility for material assets is moderate and about average, but general responsibility is high (Appendix G). Actuaries, atmospheric and space scientists, and sociologists are considered fairly critical to the performance of their organizations.

Demands for education, training, and experience are high, generally around the 80th to 90th percentiles (Appendix G). Job structure and repetition are low and requirements for an interest in creative work are at the 92nd percentile (though generally still only moderate, Appendices F and H). Time pressures are moderate and the use of measurable or verifiable criteria for the work is high, both around the 85th percentile. High interests in science rather than business and in esteem rather than productive satisfaction are required.

In summary, these occupations are very mathematical and sedentary relative to other groups, and they require few physical or interpersonal activities. To the extent that machines are used, they are probably used to further more mental and analytical tasks. With the exception of the sociologists, people seem to be dealt with only to get information from or to pass advice to (particularly to superiors within the organization). This group is more scientific and intellectually demanding than any of those yet examined--and most of those yet to be examined.

This group employs 0.3% of the labor force (Appendix I).

Group 29: Very high academic, low psychomotor, moderate people. (E.g., accountants, operations and systems analysts, economists)

Like the previous group, this one generally requires high levels of the higher-level mental activities (Appendix C) as well as the same sources of information (written, quantitative, and oral, Appendix F). Demands for psychomotor aptitudes are even lower, however, rivaling only Group 30 for the absence of such demands (percentiles ranging from lows of 1 and 2, Appendix D). Many of the motor activities are at a moderate level, though often below average. Like the previous group, exertion is very low (Appendix F). This group deals more often with people than the previous

group, but the level of specific interpersonal activities appears to be about the same. Interests and working conditions are also the same as the previous group.

In summary, this group is very similar to the previous one except that it is even lower in motor aptitudes and abilities, but deals with people more often but not in a substantially different manner.

These occupations employ 1.1% of the work force (Appendix I).

Group 30: Very high academic, low psychomotor, high people. (E.g., lawyers, psychologists, managers, and administrators)

This group includes 13 professionals, 10 managers, 3 salesmen, and 1 clerical worker.

Most mental activities as well as academic abilities are around the 90th percentile, almost all the occupations having high demands (Appendix C). Written and oral sources of information are very important, but quantitative materials and observing behavior are less so (Appendix F). Observing events is generally unimportant. Dealings with people are also high and most interpersonal activities range from moderate to high in importance (Appendix E). Coordinating and supervising non-employees are not particularly important in these occupations, but persuading, instructing, advising, and negotiating often are. For judges, clergymen, assessors and controllers, health administrators, insurance agents, real estate agents, and stock and bond salesmen, at least 3 of these 4 activities are very important. The first 3 of these occupations--judges, clergymen, and assessors and controllers--also suffer considerable stress on the job, with the judges and clergymen having high civic obligations and personal sacrifices required (Appendix A). Almost all the occupations in this group, however, have high general responsibility (but low responsibility for safety) and

are considered critical to the performance of their organizations (Appendix G). All require high levels of education, training, and related job experience.

As with the previous group, Group 30 occupations require very little psychomotor aptitude or physical exertion (Appendices D and F). The specific motor activities generally range from low to moderate in importance, with the controlled or controlling activities being more important than general handling and body movement.

Almost all these occupations require an interest in data and people versus things and objects and in esteem rather than productive satisfaction (Appendix F). Many of the managerial and sales workers also require an interest in business. Only the lawyers and clergymen appear to require an interest in creative versus routine work, even though the PAQ data show that all these occupations are almost always loosely structured and not repetitious or with a set work pace (Appendix H). In fact, the work in this group is less structured on the average than that of any other occupational group. Time pressures are at least moderate for all the occupations, the group average being at the 78th percentile for all groups.

In summary, Group 30 is like the other 2 very-high-academic-ability and low-psychomotor-ability groups (Groups 28 and 29) in its very high academic and mental but very low motor requirements. This group differs most from the other 2 because of its extensive interpersonal activities, stresses, and responsibilities, but also because it is less oriented to science and quantitative materials.

These occupations employ a relatively large 9.0% of the work force (Appendix I).

Group 31: Very high academic, moderate psychomotor, low people. (E.g., chemical engineers, civil engineers, mathematical technicians)

There are only 4 occupations in this group, 3 engineers and one technician.

This group is one of those with extremely high requirements for math aptitude (Appendix C). Demands for the mental activities are high for the engineers but only moderate for the technicians. Demands for spatial aptitude and form perception are also quite high with percentiles around 90 (Appendix D). The other psychomotor aptitudes are only moderate, however, the engineering work is considered quite skilled technical work (D1M12). Other motor activities are generally moderate, but little general body movement (D1M10) or exertion is required (Appendices D and F).

The mathematical technicians have only low demands for all the interpersonal activities, but the engineers do considerable advising (Appendix E). The engineers' dealings with people are apparently not very frequent, but they involve a moderate level of all the interpersonal activities when they do occur. Interpersonal stresses are above average, but still low (Appendix H). The most important stresses seem to be working in distracting and frustrating situations. The engineers have high general responsibility (Appendix G).

All 4 jobs require an interest in science (Appendix F). The jobs are loosely structured and not repetitious, but they all have high use of set limits, tolerances, and standards (STS) and measurable or verifiable criteria for their activities (Appendix H).

In summary, these jobs share the high demands for academic aptitudes, mental activities, and education and training of the last 3 groups examined, but they are more similar to those requiring high quantitative

rather than high people skills and they involve definitely higher psychomotor aptitudes. They are similar to some of the lower academic level crafts and technical worker groups (Groups 16 and 25) in having such set standards and criteria for work, but the Group 31 jobs are much less structured and more scientific.

These occupations employ 0.4% of the labor force (Appendix I).

Group 32: Very high academic, moderate psychomotor, moderate people. (E.g., architects, industrial engineers, geologists)

Most of these 12 occupations are engineers or physical scientists, all professionals in the census scheme.

Like the previous group, also composed primarily of engineers, this one requires very high math aptitude as well as verbal aptitude (Appendix C). Mental and motor activities, psychomotor aptitudes, strength, interpersonal stresses, general responsibilities, and education and training are also similar. The differences between these 2 groups are few. Group 32 involves more frequent dealings with people, though the activities themselves are largely the same (mostly moderate in level). There tends to be more responsibility for materials, but less set standards for carrying out work. The engineers in this group also require more of an interest in machines and processes than do those in Group 31.

In summary, this is another group distinguished by its high level scientifically and quantitatively oriented demands, but it has more interpersonal activities than some of the others and few set procedures for performing work.

This group employs 1.4% of the labor force (Appendix I).

Group 33: Very high academic, moderate psychomotor, high people. (E.g., sales engineers, registered nurses, secondary school teachers)

PAQ data are not available for 2 of these 5 professional occupations, 3 of which are health related.

These occupations require high verbal abilities but perhaps only moderate mathematical ones (Appendix C). However, the demands for mental activities are lower for secondary teachers than for the nurses and physical therapists. Motor activities are more similar and are generally moderate (Appendix D). In contrast to the other workers (with moderate demands), the teachers require only low finger and manual dexterity. (Most teachers are, in fact, in Group 30 which is the same in general academic competencies and dealings with people but which has lower psychomotor demands.)

These occupations have frequent dealings with people, with instructing and advising being the most important activities (though data are available only for the nurses, therapists, and teachers, Appendix E), and all three occupations have moderate demands for supervising non-employees. None of the 3 deal with the public (D1M21). Once again, the teachers have lower demands. The nurses and therapists also have high general responsibility and are considered critical to the performance of their organizations, but this is not the case with teachers (Appendix G).

This group exceeds all others in the importance of observing behavior, but oral and written sources of information are also important (Appendix F). As a group, interpersonal stresses are far above average, though very surprisingly they are all rated low for the secondary teachers (Appendix H). The work pace is not set nor the work repetitious, but the jobs are at least moderately structured (at least the 3 for which there are PAQ data). Nurses have the most job structure (high) and time pressure (moderate).

The interests required vary from job to job (Appendix F). Sales engineers require an interest in data and people rather than things and objects (but not an interest in science and machines in contrast to many of the engineers in Group 32). Nurses require an interest in science and social welfare (IMACH); therapists in social welfare only; college health specialties teachers in data and people versus things, science versus business, and esteem versus productive satisfaction; and secondary teachers in data and people versus things, social welfare versus machines, and esteem versus productive satisfaction.

In summary, only the health workers and teachers in this group can be well described because the other 2 do not have PAQ data. But the group seems fairly similar on the whole to Group 30 which also has high involvement with people but lower psychomotor aptitudes and less job structure. Teachers differ from the health workers in Group 33 by having fewer demands for interpersonal and mental activities and less responsibility.

These jobs employ 2.6% of the work force (Appendix I).

Group 34: Very high academic, high psychomotor, low people. (E.g., biological scientists, veterinarians, pharmacists)

These 9 occupations are all professional workers in the census scheme.

This is the last of the 4 groups with very high math as well as verbal aptitude (Appendix C). This group, however, has lower demands for the mental activities on the average than did the 3 other groups (percentiles around 70 rather than 80 to 90). This difference seems to occur because only the metallurgical engineers, agricultural scientists, and biological scientists have high demands for any of the higher level

activities (e.g., deciding, reasoning, planning).

Like the other 3 high-math groups mentioned above, occupations in this group generally require high spatial aptitude and form perception, but they more uniformly require complex involvement with things (Appendix D). The hand-related psychomotor aptitudes (finger dexterity, manual dexterity, and motor coordination) are especially high for agricultural scientists, veterinarians, clinical lab technicians, and draftsmen. Most of the jobs are highly skilled technical work (D1M12) involving moderate but below average strength (Appendices D and F). Specific motor activities vary considerably from job to job, for example, some requiring much general body movement (metallurgical engineers and pharmacists) but others not (clinical lab technicians and draftsmen) and some requiring considerable handling (agricultural scientists and clinical lab technicians, but others not (metallurgical engineers and marine scientists). Responsibilities also vary (Appendix G). For example, agricultural scientists, clinical lab technicians, and pharmacists are rated as most critical to their organizations but they are, respectively, low, moderate, and high in responsibility for the safety of others.

These occupations do not have many dealings with people, and half of them have dealings of only low complexity (Appendix E). These workers do not persuade, negotiate, coordinate, or supervise non-employees. They do moderate instructing and advising, but they do not have staff functions. The pharmacists require business interests, but all the others require an interest in science (Appendix F). Half of the occupations also require an interest in machines, processes, and techniques versus social welfare.

Only the metallurgical engineers require an interest in creative work and all but these engineers and the agricultural scientists have moderately structured work (Appendices F and H). Time pressures are moderate and standards and criteria for work (STS, MVC) are set. Interpersonal stresses are average but low.

In summary, these jobs require high verbal, math, and psychomotor abilities. Although the work is generally technical, scientific, and skilled, the specific motor activities vary from job to job. Like many groups requiring high psychomotor but low people skills, work standards and criteria are clear. Responsibilities vary from high to low.

These occupations employ 0.8% of the work force (Appendix I).

Group 35: Very high academic, high psychomotor, moderate people. (E.g., health practitioners, n.e.c., airplane pilots, musicians and composers).

Although all 3 occupations are professional workers (only the last 2 of which have PAQ data), they form a seemingly heterogeneous group.

The airplane pilots require high levels of decision making, reasoning, planning, and combining and analyzing information, but the musicians and composers usually require little of these activities despite the high academic aptitudes required (Appendix C). The latter only do a lot of coding. These occupations are above average but generally only moderate in the hand-related psychomotor aptitudes required (Appendix D). Both pilots and musicians, however, require considerable body movement (DIM10) and general physical coordination (e.g., limb movement without visual control, DIM16). The pattern of motor activities is distinctive in this group because it requires more general body movement and coordination than any other group, but less handling (DIM15) and controlled manual

activities (D1M13) than any other group.

Dealings with people are at a moderate level of complexity, with the pilots having more interpersonal activities (Appendix E). Musicians do some instructing and a lot of entertaining, but pilots have moderate demands for most of the interpersonal activities. Pilots work under highly distracting circumstances in contrast to the musicians who face only moderate distraction (Appendix H). The musicians face none of the interpersonal stresses but pilots do. The interests demanded are in machines (for pilots) and in things versus data or people (for musicians, Appendix F). Only the health practitioners are interested in social welfare versus machines.

Musicians need an interest in creative work and their work is unstructured except for having a set work pace and cycled activities (Appendices F and H). In contrast, pilots have highly structured work with set limits, tolerances, and standards as well as measurable criteria for their work.

In summary, only 2 of the occupations in this group can be well-described and it is apparent that, although general competencies may be the same, specific activities and job conditions are extremely different. Pilots have very responsible jobs with clear standards and high job structure, whereas musicians have only loosely structured jobs with low demands for most of the mental and interpersonal demands measured here. Both occupations are similar, however, in their very high demands for general body movement and coordination but very low demands for handling and controlled manual activities.

This group employs 0.2% of the work force (Appendix I).

Group 36: Very high academic, high psychomotor, high people. (E.g., dentists, physicians, radiological technicians)

These 5 professional occupations are all health related. PAQ data are available only for the physicians and radiological technicians. These jobs can be considered the most generally demanding because they make high demands on all the 3 general competency dimensions.

The physicians require high levels of all the mental activities except the most clerically-related ones; the radiological technicians generally require only moderate levels of these activities (Appendix C).

Demands for psychomotor aptitudes are higher in this group than in any other, the percentiles generally being in the high 90's (Appendix D). Specific motor activities vary, with physicians being high on skilled technical work (DlM12) and moderate on most the other activities, whereas the technicians are high on handling (DlM15) and the use of tools, machines, and equipment (DlM9, DlM14). Exertion is moderate for all occupations in this group (Appendix F).

Dentists, physicians, and optometrists deal with people at a higher level of complexity than do the dental hygenists or radiological technicians (Appendix E). The technicians have low demands for most of the interpersonal activities, their interactions presumably being standardized. Physicians, however, have at least moderate interpersonal demands and often high ones (i.e., for persuading, instructing, advising, and supervising non-employees). Sources of information are quite similar for the 2 occupations: high levels of written, pictorial, and oral information and at least moderate levels of quantitative and behavioral information (Appendix F). Physicians must exercise much vigilance and have considerable responsibility, but radiological technicians do not (Appendix F). Both require considerable education, training, and licenses.

All occupations in this group require an interest in science and all but dental hygienists require an interest in social welfare (Appendix F). The physicians must make personal sacrifices and they face moderate levels of all the personally stressful job conditions (Appendix H). The radiological technicians experience strained and conflict-ridden personal contacts. Job structure, time pressure, and repetition are at least moderate for these 2 occupations.

In summary, these occupations make high demands for all the general competencies, though specific activities vary. Although PAQ data are available for only 2 occupations, the 5 occupations probably break down into a more demanding and a less demanding subgroup (physicians, dentists, and perhaps optometrists versus dental hygienists and radiological technicians). If physicians and technicians are a guide, the first group faces considerable demands for most mental and interpersonal activities as well as considerable responsibility and stress, whereas the second subgroup does not. Group 36 as a whole is composed of scientific health-related jobs requiring higher psychomotor aptitudes than any other occupational group.

This group employs 0.6% of the work force (Appendix I).

Conclusions

The foregoing analyses shed some light on the issue of employability. Before discussing that issue, however, a few remarks will be made about the quality of the data that went into the analyses and the job classification that emerged from them.

Validity of the DOT and PAQ Data

As discussed earlier, there is little evidence about the validity of the DOT attribute ratings and more evidence would be desirable for the PAQ

as well. Although this report was not devoted to examining the validity of these two systems of job data, it does provide some evidence supporting the validity of many of the measures in the PAQ and DOT.

The factor analyses of the data were sensible. Although some factors appeared that were composed primarily of either PAQ or DOT items, they appear to have resulted largely because the two sets of measures cover somewhat different domains of job attributes. Generally, theoretically similar or related DOT and PAQ items were empirically associated in reasonable ways. Also, examination of the characteristics of particular occupations and of the broader occupational groups showed that both sets of items contributed to descriptions that are consistent with people's general impressions of those occupations.

While the general impression is of reasonable validity, some of the results suggest that the individual items should be investigated more thoroughly. For example, some of the DOT and PAQ variables of seemingly identical content were not as highly correlated as one might desire: EDUCATN and GED correlated .82; EXERTION and STRENGTH, .77; MATHDOT and MATHPAQ, .76; and TRAINING and SVP, .60. The two sets of data are based on different sets of specific occupations, so it is difficult to say whether low correlations might result from this or from low validity.

One impression gained from examining the different groups in the occupational classification was that more job descriptors were needed to describe the differences among the occupations. For example, some of the groups have fairly frequent dealings with people according to the DOT, but the occupations carried out none of the interpersonal activities measured by the PAQ variables. This is consistent with the perception on the part of many users of the PAQ that it does not allow them to

describe jobs adequately. (This would certainly be more true of the DOT.) It should be noted, however, that we purchased data for only about a third of the PAQ job elements and those other elements surely would have allowed us to better describe and differentiate the different occupational groups.

Meaningfulness of the Competency-Based Occupational Classification

The detailed descriptions of each of the 34 occupational groups show that many of the groups are composed of occupations that indeed do seem to be similar, and that the classification groups jobs in sensible and useful ways. However, these descriptions also reveal some limitations and problems with this initial classification attempt. These will be reviewed below.

Some of the groups appear to be quite heterogeneous sets of jobs. Although the occupations in a group of course had to score similarly on the 3 major competency dimensions in order to be grouped together, a look at their more specific skills, responsibilities, and activities sometimes shows them to be quite different. Some differences are to be expected because many of the activities and responsibilities represent job dimensions that are independent of those used to create the groups. However, a few of the groups are strikingly more heterogeneous than the others. Many of these are groups rated as moderate in their dealings with people, leading one to suspect that the cutting points chosen for dividing occupations into groups along this dimension should be changed to pick up more meaningful differences. It might be sensible to divide occupations into only two groups, those who deal with people and those who do not. Most occupations have little to do with people.

As already mentioned, another peculiarity is that crafts apprentices are often located in different groups than the craftsmen to which they are apprenticed. This might not be unusual, except that the apprentices are sometimes placed in more highly skilled groups. This should be examined. Greater academic skills are often required to train for a job than to actually perform it, which may partly account for this phenomenon. Nevertheless, this peculiarity may make users more skeptical of the classification.

The 3 major dimensions used to create the classification represent an effort to summarize in a simple way some of the major differences among occupations and the competencies they require. This means that some important differences are not captured by the classification; that is one reason why the more detailed data were also shown for each occupation. In an effort to make things simpler and more understandable, and thus more useful, one must make such choices. A less obvious result of these choices is that the major dimensions themselves must be simplified and the way they are simplified determines the meaning and content of those dimensions. More concretely, the academic dimension was created by averaging demands for verbal and math aptitude. These two requirements are highly correlated, but they are clearly not the same and some occupations demand more of one than the other. One could have separate math and verbal dimensions (as well as other academic ones), but the result would be greater confusion than clarification and presumably the average of the two fits most people's conceptions of academic ability. The case may be different with the psychomotor and people dimensions, however.

The psychomotor dimension used in the classification is based on three variables, all measuring dexterity and coordination of the fingers

and hands. Although there were good reasons for restricting the meaning of the psychomotor factor to these types of aptitudes, it should be clear that there are other psychomotor aptitudes and that they were not used in creating the classification. So an occupation that is rated here as high in psychomotor aptitude is not necessarily high on eye-hand-foot coordination, color discrimination, or other aptitudes that are usually discussed under the broad heading of psychomotor skills. In short, the "psychomotor dimension" in this classification refers to a specific set of psychomotor aptitudes and not to all of them.

The people dimension could have been defined in various ways as well, and an attempt was made to measure the most general people dimension (as already discussed). But the factor analyses and the specific descriptions are a reminder that there is no single "people" or interpersonal dimension. One observation from the detailed descriptions is that the activities people carry out, and presumably the skills they require, when they deal with people vary from group to group. In particular, there seem to be higher- and lower-level interpersonal activities, much as measured by the DOT variable PEOPLE (complexity of involvement with people). Higher-level activities include advising and negotiating, as suggested by their correlations of .7 and .6 with the academic aptitude dimension. Fairly general lower-level activities do not appear to be measured by either the PAQ or DOT, presuming there are some, because some of the occupations with frequent dealings with people were not rated as carrying out any of the PAQ interpersonal activities for which we had data, unless one counts obtaining job information orally as an interpersonal activity.

The classification is useful for showing which occupations require more or less of the general competencies than do others. The classification

would be more useful if absolute values could be assigned to these dimensions. For example, it would be helpful to have grade levels attached to the academic dimension. This is essentially a problem of linking measurements carried out by different organizations for different purposes. For example, schools are of course interested in assigning grade levels to different performance levels of their students, but these grade levels have no obvious meaning in relation to the world of work. This linkage between job demands and school performance is difficult to carry out, though some investigators are attempting to do this for reading levels (e.g., Sticht, 1975). We will look into the possibilities for assigning more school-relevant scores to the different groups in the classification.

Several desirable features of the classification should be reiterated before going on. Not all occupations could be classified because DOT data were not available for 31 occupations. But as Appendix I shows, these 31 occupations employ only a minor fraction of jobs in the U.S. economy -- 0.8%. The classification is, therefore, quite comprehensive. Also, by listing all occupations in the census classification (which often include many more specific job titles), one gets a broader view of what sorts of jobs are available -- jobs which do not pop readily into mind as do doctor, lawyer, truck driver, secretary, policeman, and other publically-visible occupations. There really is a greater variety of jobs available to people than they are usually aware of.

The Issue of Employability

What does this research say about employability? It shows what mixes of competencies are most often required. It shows that there are jobs requiring only moderate academic aptitude but which are otherwise

skilled jobs, but it also shows that some jobs require high levels of all the major competencies. Some implications for high school programs are discussed below.

Employability is clearly not a one-dimensional phenomenon. Schooling and its associated aptitudes may represent the most important dimension, but it is important to know that it is not the only one. Some youngsters do not desire or are not able to go very far in school and it is useful to know what other non-academic competencies it may be useful for them to cultivate or exploit for eventual employment. How common were the different combinations of skills?

The largest single occupational group is Group 4 with 19.1% of the work force (see Table 8). This group requires only low academic ability and moderate psychomotor aptitudes; it has no dealings with people. The jobs vary in desirability, but some are good jobs -- e.g., truck driver. Most are machine operators in factories. According to the PAQ data, the formal education required to get these jobs is low -- generally "less than that required for completion of high school curriculum." These jobs often require between 30 days and one year of job training, but presumably this is often provided on the job. There are many students who fail to complete high school and it might be useful to make these potential job options known to them, particularly because they are not as visible to the public as are some of the other jobs requiring little education -- e.g., postal clerks, food counter workers, parking attendants, dishwashers. An even more helpful action on the part of schools would be for them to arrange work-study programs to get youngsters into such on-the-job training, for schools probably have no role doing the training themselves. Dropouts and youngsters with low academic aptitude are not necessarily unable to

find jobs requiring higher academic skills, but their chances are not good on the average. If they recognize this fact, potential dropouts may find going on in school or joining work-study programs attractive.

Turning to jobs which require moderate academic aptitude, and often the equivalent of a high school education, we find that once again most of the jobs (amounting to 22% of the work force) require moderate psychomotor aptitudes, which presumably most people have. Of this 22%, 8% have low dealings with people (Group 13), 4% have moderate dealings (Group 14), and 9% have frequent dealings with people. Many of the occupations in the first two of these groups are craftsmen -- e.g., carpenters, auto mechanics, telephone linemen. Schools often have vocational programs training youngsters in some of these crafts. Given the mixture of skills required in Group 13 and 14 jobs -- moderate levels of both academic and psychomotor aptitude -- it would seem important to cultivate the most relevant academic aptitudes while pursuing such vocational training. The jobs in Group 15, which have frequent dealings with people, are often sales and service rather than crafts jobs and probably seldom are included in vocational programs. They need not be, but a class devoted to personal appearance and interpersonal skills might help youngsters obtain and keep such jobs. Youngsters often do not know how to behave when dealing with the public and this is a big handicap in jobs where workers must deal extensively with other people.

Although this is only a guess, it appears that training for more of the jobs requiring high psychomotor aptitude but moderate academic skills is provided in community colleges or proprietary vocational schools -- e.g., cosmetology, stenography, radio repair. If this is the case, schools could usefully provide such training information to students not going

beyond high school but who want to make use of their high psychomotor skills. With moderate academic skills, there is a wider range of skill combinations available in jobs than is the case with jobs requiring only low academic ability. Perhaps moderate intellectual skills are necessary before one can possess or usefully employ high levels of the other types of competencies.

The jobs requiring high academic skills often require some post-secondary education, and the jobs requiring very high academic aptitudes generally require at least a bachelors degree. Secondary schools probably have no vocational function here except to make available a college preparatory track in the high school and to provide some career guidance services or materials. The secondary school as a feeder to post-secondary schools has been well established in general, and it is the school as feeder directly to jobs or job training that could be improved for the benefit of students who develop only moderate academic skills or lower. The classification helps to identify the sets and numbers of occupations that require different mixes of competencies and to better gauge what types and sizes of programs schools would need to further the employability of students with only low or moderate academic aptitudes or interests.

Table 1

Rotated Orthogonal Factor Loadings[1] for All DOT Aptitude-Related Items: All Occupations (N=396)

Job Attribute[2]	Factor 1: Academic Aptitudes	Factor 2: Dealing With People	Factor 3: Psychomotor Aptitudes	Factor 4: Strength	$\bar{x}$	SD
MATHDOT	.96				2.71	1.19
REASONDT	.96				3.62	1.08
INTEL	.93				3.22	.73
LANG	.93	.28			3.06	1.27
NUM	.92				2.74	.76
DATA[3]	.90	.27			3.11[4]	1.74
VERBALDT	.89	.32			3.04	.83
ICREATE	.79				-.28	.44
CLERICAL	.60	.29		-.58	2.48	.73
SPATIAL	.57	-.41	.41	.39	2.72	.68
DEPL	.28	.86			.37	.39
ISCIENCE	.41	-.70			-.11	.53
IDATA	.51	.70			-.26	.66
PEOPLE[3]	.53	.69			6.20[4]	1.63
IMACH	-.26	-.65	.32		.38	.54
INFLU	.28	.55			.09	.23
IPRODUCT		-.54	.48		-.05	.40
FINDEX			.92		2.53	.51
MOTORCOR			.83		2.58	.44
THINGS[3]		-.41	.78		4.20[4]	2.10
MANDEX		-.38	.72	.38	2.72	.47
FORMPER	.51	-.26	.67		2.78	.57
COLORDIS	.28		.58	.25	1.67	.57
IFTCOOR				.78	1.47	.54
STRENGTH	-.48	-.31		.70	2.23	.67
%Variance Explained	36	18	17	9		

[1]Factor loadings lower than .25 have been omitted here.
[2]Attribute scales are described in Appendix A.
[3]Scoring has been reversed for easier interpretation.
[4]High score means low level of involvement.

Table 2

Rotated Oblique Factor Loadings[1] for all DOT Aptitude-Related Items: All Occupations (N=396)

Job Attribute[2]	Factor 1: Academic Aptitudes	Factor 2: Psychomotor Aptitudes	Factor 3:[3] Dealing With People	Factor 4: Strength
MATHDOT	.98			
REASONDT	.95			
NUM	.94			
INTEL	.92			
LANG	.91			
DATA[3]	.88			
VERBALDT	.86			
ICREATE	.78			.25
SPATIAL	.65	.26	-.39	.38
FINDEX		.98		
MOTORCOR		.87		
THINGS[3]		.74		
MANDEX		.66		.32
FORMPER	.52	.64		
COLORDIS		.57		
IPRODUCT		.43	-.42	
DEPL			.84	
ISCIENCE	.53		-.78	
PEOPLE[3]	.47		.64	
IDATA	.41		.63	
IMACH			-.59	
INFLU			.51	
IFTCOOR				.82
STRENGTH	-.42			.69
CLERICAL	.54			-.58

Correlations Among Factors

Factor 1	1.00			
Factor 2	.05	1.00		
Factor 3	.24	-.35	1.00	
Factor 4	-.11	.27	-.23	1.00

[1]Factor loadings lower than .25 have been omitted here.
[2]Attribute scales are described in Appendix A.
[3]Scoring has been reversed for easier interpretation.
[4]High score means low level of involvement.

Table 3

Rotated Orthogonal Factor Loadings[1] for all DOT Aptitude-Related Items: Occupations Requiring High General Academic Aptitude (N=137)

Job Attribute[2]	Factor 1: Academic Aptitudes	Factor 2: Psychomotor Aptitudes	Factor 3:[3] Dealing With People	Factor 4: Strength	$\bar{X}$	SD
REASONDT	.94				4.79	.67
LANG	.91				4.48	.78
INTEL	.91				4.05	.49
VERBALDT	.86		.27		3.99	.53
DATA[3]	.81				1.35[4]	.85
MATHDOT	.80		-.37		3.96	.94
NUM	.68		-.38		3.55	.61
ICREATE	.61			.36	.06	.34
ISCIENCE	.58	.34	-.44		.04	.74
FINDEX		.93			2.53	.64
MANDEX		.88		.30	2.47	.57
MOTORCOR		.85			2.45	.53
THINGS[3]		.84	-.32		4.78[4]	2.36
FORMPER	.30	.74	-.25		3.00	.68
COLORDIS		.64		.37	1.75	.65
SPATIAL	.47	.49	-.36	.34	3.00	.86
PEOPLE[3]			.83		4.95[4]	1.71
IMACH			-.81		.07	.56
DEPL	-.30		.80		.60	.38
IDATA			.68		.31	.55
INFLU			.61		.21	.31
IPRODUCT		.38	-.56		-.29	.42
STRENGTH		.33		.76	1.69	.47
CLERICAL				-.75	3.12	.53
IFTCOOR				.71	1.34	.52
% Variance Explained	25	20	17	9		

[1]Factor loadings lower than .25 have been omitted here.
[2]Attribute scales are described in Appendix A.
[3]Scoring has been reversed for easier interpretation.
[4]High score means low level of involvement.

Table 4

Rotated Orthogonal Factor Loadings[1] for all DOT Aptitude-Related Items: Occupations Requiring Moderate General Academic Aptitude[2] (N=120)

Job Attribute	Factor 1: Psychomotor vs. People	Factor 2: Verbal Aptitudes	Factor 3: Strength	Factor 4: Math Aptitudes	$\bar{x}$	SD
FORMPER	.84				2.85	.47
FINDEX	.81	.28			2.70[5]	.46
THINGS[4]	.80		.28	.27	3.43[5]	2.11
IPRODUCT	.74			.28	.11	.44
DEPL	-.72	.33		-.36	.37	.38
MANDEX	.68		.54		2.84	.46
MOTORCOR	.68			-.38	2.72[5]	.42
PEOPLE[4]	-.67	.44		-.38	6.34[5]	1.28
SPATIAL	.66		.47		2.73	.58
IMACH	.58	-.33	.26	.36	.53	.52
ISCIENCE	.56				-.25	.41
COLORDIS	.44		.36		1.76	.58
LANG		.88			2.88	.48
REASONDT		.84			3.55	.40
DATA[4]		.77			2.95[5]	.79
INTEL		.75			3.07	.24
VERBALDT		.54		-.46	2.92	.27
ICREATE	.32	.50	.48		-.26	.39
CLERICAL	-.33		-.79		2.50	.57
IFTCOOR			.78		1.56	.58
STRENGTH			.74	.32	2.34	.67
NUM				.76	2.62	.30
MATHDOT		.56		.56	2.57	.51
IDATA	-.46	.42	-.33	-.53	-.32	.58
INFLU					.05	.17
% Variance Explained	26	17	13	10		

[1]Factor loadings below .25 have been omitted here.
[2]A fifth factor, not shown here, had an eigenvalue above 1.0. It consisted primarily of the variable INFLU (factor loading of .77).
[3]Attribute scales are described in Appendix A.
[4]Scoring has been reversed for easier interpretation.
[5]High score means low level of involvement.

Table 5

Rotated Orthogonal Factor Loadings[1] for All DOT Aptitude-Related Items: Occupations Requiring Low General Academic Aptitude (N=139)

Job Attribute[2]	Factor 1: Academic Aptitudes	Factor 2:[3] Dealing With People	Factor 3: Psychomotor Aptitudes	Factor 4: Strength	$\bar{x}$	SD
REASONDT	.91				2.54	.49
INTEL	.90				2.54	.30
MATHDOT	.86				1.62	.42
NUM	.85				2.05	.28
LANG	.82				1.82[4]	.47
DATA[3]	.78	.27			4.99[4]	.87
SPATIAL	.69	-.43	.27	.33	2.44	.40
VERBALDT	.68	.47			2.22	.23
CLERICAL	.66		-.39	-.42	1.84	.37
ICREATE	.60		.56		-.63[4]	.27
THINGS[3]	.58	-.38	.51		4.32[4]	1.57
DEPL		.89			.15	.27
ISCIENCE		-.85			-.12	.25
IDATA		.82			-.75	.31
IMACH	.30	-.69	.29		.57[4]	.40
PEOPLE[3]	.45	.68			7.31[4]	.71
MANDEX		-.55	.37		2.85	.21
INFLU		.54			.01	.06
MOTORCOR	.43	-.49	.26		2.58	.31
IPRODUCT		-.26	.76		.05	.16
FINDEX			.76		2.38	.34
FORMPER	.54	-.33	.63		2.51	.38
COLORDIS			.62	-.26	1.50	.40
IFTCOOR				.79	1.52	.49
STRENGTH				.75	2.65	.46
%Variance Explained	30	20	14	7		

[1]Factor loadings below .25 have been omitted here.
[2]Attribute scales are described in Appendix A.
[3]Scoring has been reversed for easier interpretation.
[4]High score means low level of involvement.

Table 6

Rotated Orthogonal Factor Loadings[1] for all DOT and PAQ Aptitude-Related Items: All Occupations (N=301)

Job Attribute	Factor 1: Academic Aptitudes	Factor 2: Psychomotor Aptitudes	Factor 3: Dealing With People	Factor 4: Vigilance	Factor 5: Dealing With Public	Factor 6: Strength
REASONDT	.93					
LANG	.93					
INTEL	.90					
VERBALDT	.90					
MATHDOT	.90					
DATA[3]	.90					
NUM	.88					
REASONPQ	.88					
COMBINE	.87					
WRITE	.86					
ANALYZE	.84			.27		
DECIDE	.83					
PLAN	.82					
ADVISE	.82			.25		
COMPILE	.81					-.28
STAFFUNC	.79	-.26				
MATHPAQ	.79	.25				
WRITTEN	.74				.25	
ICREATE	.74	.31	.25			
NEGOTIAT	.72	-.32		.25	.32	
PERSUADE	.71	-.28	.30		.37	
CONFLICT	.68	-.25		.30	.28	
FRUST	.67		.25	.28	.39	
CLERICAL	.67					-.53
COORDIN	.66		.35	.30		
QUANT	.65		-.32		.32	
DIM12	.65	.38				
PEOPLE[3]	.64	-.26	.52			
IDATA	.63	-.30	.47			
CODE	.62					-.38
INSTRUCT	.61		.36	.37		
PUBSPEAK	.61		.52			
STRENGTH	-.59	.31				.55
VERBALPQ	.59		.29		.43	
DISTRACT	.59				.52	
STRAINED	.56	-.29	.33	.27	.36	
SACRIFC	.55		.42	.42	.26	
PICTORAL	.55	.42				.33
REOCONT	.50		.38		.46	
DIM10	-.45		.30			.40
DIM9	-.43	.28		.25		
INFLU	.40	-.32	.34			
DIM15	-.34		.31		.26	
THINGS[3]		.83				
FINDEX		.82				-.26

Table 6 (contd.)

Job Attribute	Factor 1: Academic Aptitudes	Factor 2: Psychomotor Aptitudes	Factor 3: Dealing With People	Factor 4: Vigilance	Factor 5: Dealing With Public	Factor 6 Strength
MANDEX	-.41	.80				
FORMPER	.36	.76				
MOTORCOR	-.29	.71				-.26
SPATIAL	.38	.67			-.31	
IPRODUCT	-.40	.62				
COLORDIS		.57				
DIM13		.57				.46
PATTERNS		.51				.36
SUPERVIS	.26		.72	.26		
ENTERTN			.64			
IMACH	-.39	.44	-.57			
DEPL	.46	-.41	.53		.30	
CATER			.52		.46	
BEHAVIOR	.50		.51	.33		
SOCCONT			.34		.26	
VIGCHANG				.83		
VIGINFRE				.78		
EVENTS				.72		
RECOGNIT	.32			.61		
DIM11				.58		
IFTCOOR		.27		.51		
DIM14				.44		
MEMORY				.26	.63	
DIM21		-.28			.63	
ISCIENCE		.41	-.27		-.52	
DIM19						.55
EXERTION	-.47	.30		.28		.53
DIM16						-.51
TRANSCRB	.32			.27	.40	-.48
% Variance Explained	33	10	7	7	5	5

[1]Factor loadings lower than .25 have been omitted here.
[2]Attribute scales are described in Appendix A.
[3]Scoring has been reversed for easier interpretation.
[4]High score means low level of involvement.

Table 7
The Levels of Academic, Psychomotor, and People Aptitudes Used to Define Major Groups of Occupations

Levels of the Major Dimensions	Range of Scores	% of Occupations
Academic aptitudes (Num + VerbalDT)		
Low	3.00 - 4.77	30%
Moderate	4.78 - 5.99	30%
High	6.00 - 7.00	20%
Very High	7.01 - 10.00	20%
Psychomotor aptitudes (Findex + Manex + Motorcor)		
Low	4.00 - 7.00	30%
Moderate	7.01 - 8.99	50%
High	9.00 - 12.00	20%
Dealing with people (Dep1)		
Low	.00 - 0.20	50%
Moderate	0.21 - 0.66	20%
High	0.67 - 1.00	30%

Table 8

Percent of the Work Force in Jobs with

Different Levels of Three General Competencies

Academic	Psychomotor	Dealing With People			
		Lo	Mod	Hi	
Lo	Lo	2.6	1.8	0.6	
	Mod	19.1	1.5	0.4	27.9%
	Hi	1.9	-	-	
Mod	Lo	0.04	2.5	2.1	
	Mod	8.3	4.3	9.2	31.4%
	Hi	3.3	0.8	0.9	
High	Lo	0.04	0.6	7.0	
	Mod	2.4	0.4	1.7	17.5%
	Hi	1.1	0.2	4.1	
Very High	Lo	0.3	1.1	9.0	
	Mod	0.4	1.4	2.6	16.4%
	Hi	0.8	0.2	0.6	

Note: Another 0.8% of the work force is not included above because the occupations could not be classified; another 6.0% are not included because their occupations were not known.

Figure 1

36 Occupational Groups Defined According to Levels of Academic Abilities, Psychomotor Abilities, and Dealings with People Required

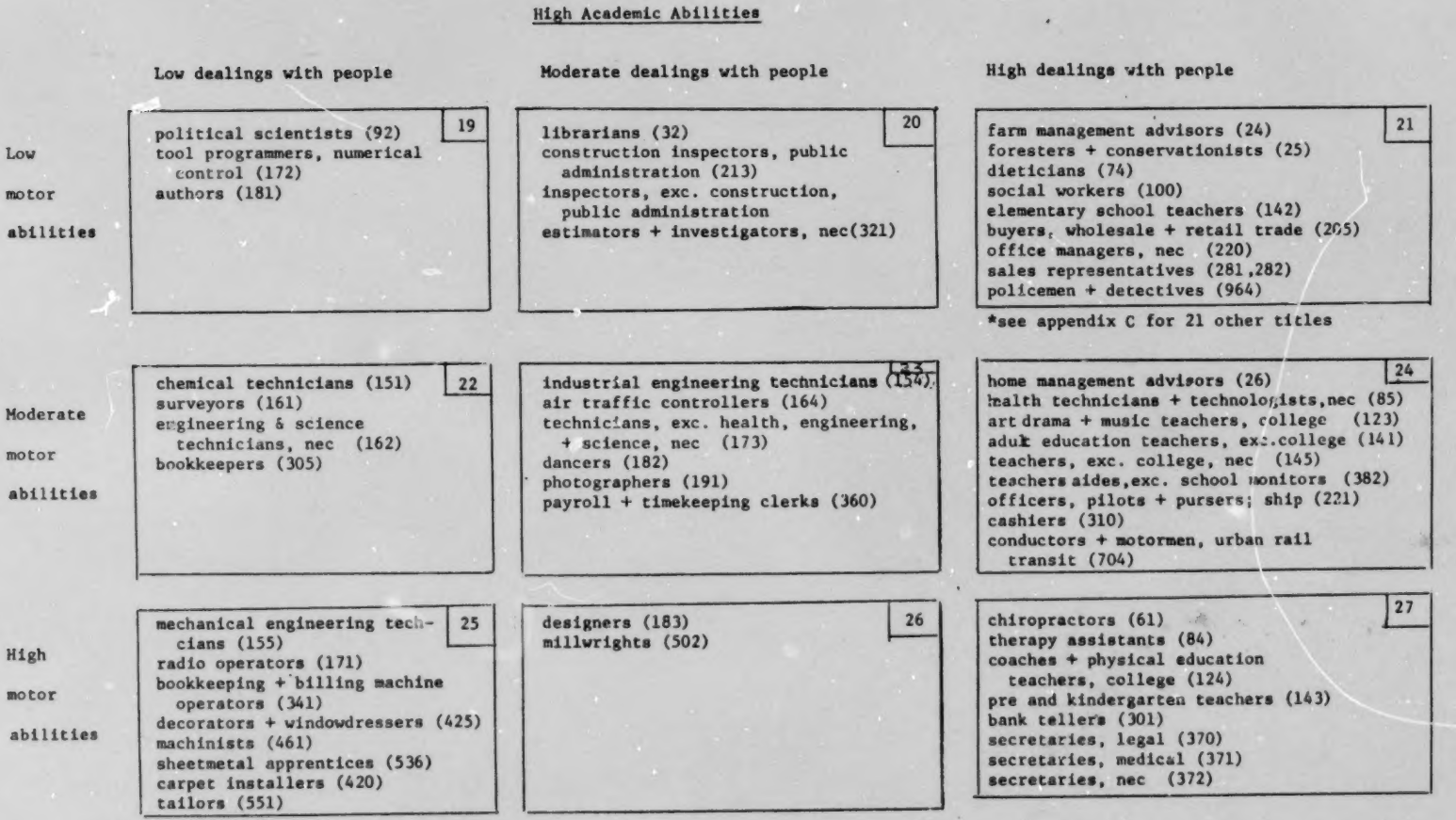
Low academic abilities

	Low dealings with people	Moderate dealings with people	High dealings with people
Low motor abilities	1 freight + materials handlers (753) longshoremen + stevedores (760) stock handlers (762) metal heaters (626) chambermaids + maids, exc. private household (901) cleaners + charwomen (902) dishwashers (913) laundresses, private household (983)	2 furniture + wood finishers (443) deliverymen + routemen (705) ushers, recreation + amusement (953) crossing guards + bridge tenders (960) maids + servants, private household (984)	3 Parking attendants (711) busboys (911) attendants, personal service (933) baggage porters + bellhops (934) bootblacks (941) elevator operators (943) childcare workers, private household (980)
Moderate motor abilities	4 weighers (392) bakers (402) bulldozer operators (412) forgemen + hammermen (442) tile setters (560) assemblers (602) graders + sorters, manufacturings (624) drill press operatives (650) welders + flame-cutters (680) farm laborers, wage workers (822) *see appendix C for 71 other titles	5 messengers + office boys (333) garage workers + gas station attendants (623) boatmen + canalmen (701) railroad brakemen (712) taxicab drivers + chauffeurs (714) animal caretakers, exc. farm (740) garbage collectors (754) food service workers, exc. private household (916)	6 food counter + fountain workers (914) childcare workers, exc. private household (942)
High motor abilities	7 postal clerks (361) furriers (444) jewelers + watchmakers (453) shoe repairmen (542) meat cutters + butchers, exc. manuf. (631) sewers + stitchers (663) knitters, loopers, + toppers (671)	8 none	9 none

Moderate Academic Abilities

	Low dealings with people	Moderate dealings with people	High dealings with people
Low motor abilities	10 proofreaders (362)	11 expediters + production controllers (323) library attendants + assistants (330) mail handlers, exc. post office (332) stock clerks + storekeepers (381) not specified clerical workers (395) bartenders (910) cooks, private household (981)	12 actors (175) collectors, bill + account (313) dispatchers + starters, vehicle (315) enumerators + interviewers (320) receptionists (364) boarding + lodging house keepers (940) guards + watchmen (962) *see appendix C for 8 other titles
Moderate motor abilities	13 billing clerks (303) keypunch operators (345) shipping + receiving clerks (374) carpenters (415) compositors + typesetters (422) job + die setters, metal (454) auto mechanics (473) structural metal craftsmen (550) farmers (801) *see appendix C for 29 other titles	14 athletes + kindred workers (180) file clerks (325) mail carriers, post office (331) electric power linemen + cablemen (433) plumbers + pipe fitters (522) power station operators (525) roofers + slaters (534) telephone linemen + splicers (554) dental assistants (921) *see appendix C for 10 other titles	15 podiatrists (71) sales clerks, retail trade (283) telephone operators (385) foremen, nec (441) bus drivers (703) waiters (915) nursing aides, orderlies, attendants (925) *see appendix C for 6 other titles
High motor abilities	16 painters + sculptors (190) typists (391) cabinet makers (413) dental laboratory technicians (426) radio repairmen (485) photoengravers + lithographers (515) sign painters + letterers (543) tool + die makers (561) *see appendix C for 13 other titles	17 stenographers (376) brickmason + stonemason apprentices (411) electricians (430) drywall installers + lathers (615)	18 clerical assistants, social welfare (311) lay midwives (924) barbers (935) hairdressers + cosmotologists (944) personal service apprentices (945)

Figure 1 (cont.)



Very High Academic Abilities

	Low dealings with people	Moderate dealings with people	High dealings with people
Low motor abilities	28 computer programmers (3) computer specialists, nec (5) actuaries (34) mathematicians (35) statisticians (36) atmospheric + space scientists (43) sociologists (94) social scientists, nec (96)	29 accountants (1) operations + systems research analysts (55) economists (91)	30 judges (30) lawyers (31) personnel + labor relations workers (56) clergymen (86) psychologists (93) teachers, college, subject not specified (140) editors + reporters (184) bank officers + financial managers (202) managers + administrators, nec (245) *see appendix C for 18 other titles
Moderate motor abilities	31 aeronautical + astronautical engineers (6) chemical engineers (10) civil engineers (11) mathematical technicians (156)	32 architects (2) industrial engineers (13) mechanical engineers (14) mining engineers (20) petroleum engineers (21) archivists + curators (33) chemists (45) geologists (51) urban + regional planners (95) *see appendix C for 3 other titles	33 sales engineers (22) registered nurses (75) therapists (76) health specialties teachers, college (113) secondary school teachers (144)
High motor abilities	34 metallurgical + materials engineers (15) agricultural scientists (42) biological scientists (44) marine scientists (52) life + physical scientists, nec (54) pharmacists (64) veterinarians (72) clinical lab technicians and technologists (80) draftsmen (152)	35 health practitioners, nec (73) airplane pilots (163) musicians + composers (185)	36 dentists (62) optometrists (63) physicians (65) dental hygienists (81) radiological technicians + technologists (83)

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Appendix A

DOT and PAQ Job Attribute Variables

This appendix lists all DOT scales and most PAQ scales that were obtained from the PAQ team. Not all of these variables have been included in the analyses presented here. The DOT items are listed on pages A2-A17; PAQ job element items are listed on pages A18-A31; PAQ job dimension scales are listed on pages A32-A34.

The following information is listed for each variable: the variable name as used in this report; a description of the variable's content or meaning; and the coding options. The wording of the latter two are taken directly from relevant DOT and PAQ sources (Miller et al., 1980; U.S. Department of Labor, 1977; McCormick, Jeanneret, and Mecham, 1969). The PAQ job element items are taken directly from the PAQ questionnaire.

When the same coding options are applicable to more than one variable, those codes are listed in a box preceeding the variables to which they apply. When coding options are particular to the variable, they are listed after the variable.

NOTE. The PAQ items are not now included in this appendix. They will be added after we have received permission from the Purdue Research Foundation, who holds the copyright to the PAQ, to reprint them.

Items from DOT (Dictionary of Occupational Titles)

I. Worker Functions

Data — Complexity of function in relation to data. Information, knowledge, and conceptions, related to data, people, or things, obtained by observation, investigation, interpretation, visualization, and mental creation. Data are intangible and include numbers, words, symbols, ideas, concepts, and oral verbalization.

Codes

0 Synthesizing: Integrating analyses of data to discover facts and/or develop knowledge concepts or interpretations.

1 Coordinating: Determining time, place, and sequence of operations or action to be taken on the basis of analysis of data; executing determination and/or reporting on events.

2 Analyzing: Examining and evaluating data. Presenting alternative actions in relation to the evaluation is frequently involved.

3 Compiling: Gathering, collating, or classifying information about data, people, or things. Reporting and/or carrying out a prescribed action in relation to the information is frequently involved.

4 Computing: Performing arithmetic operations and reporting on and/or carrying out a prescribed action in relation to them. Does not include counting.

5 Copying: Transcribing, entering, or posting data.

6 Comparing: Judging the readily observable functional, structural, or compositional characteristics (whether similar to or divergent from obvious standards) of data, people, or things.

People — Complexity of function in relation to people. Human beings; also animals dealth with on an individual basis as if they were human.

Codes

0 Mentoring: Dealing with individuals in terms of their total personality in order to advise, counsel, and/or guide them with regard to problems that may be resolved by legal, scientific, clinical, spiritual, and/or other professional principles.

1 Negotiating: Exchanging ideas, information, and opinions with others to formulate policies and programs and/or arrive jointly at decisions, conclusions, or solutions.

2 Instructing: Teaching subject matter to others, or training others (including animals) through explanation, demonstration, and supervised practice; or making recommendations on the basis of technical disciplines.

3 Supervising: Determining or interpreting work procedures for a group of workers, assigning specific duties to them, maintaining harmonious relations among them, and promoting efficiency. A variety of responsibilities is involved in this function.

4 Diverting: Amusing others. (Usually accomplished through the medium of stage, screen, television, or radio.)

5 Persuading: Influencing others in favor of a product, service, or point of view.

6 Speaking-Signaling: Talking with and/or signaling people to convey or exchange information. Includes giving assignments and/or directions to helpers or assistants.

7 Serving: Attending to the needs or requests of people or animals or the expressed or implicit wishes of people. Immediate response is involved.

8 Taking Instructions-Helping: Helping applies to "non-learning" helpers. No variety of responsibility is involved in this function.

Things

Complexity of function in relation to things. Inanimate objects as distinguished from human beings, substances or materials; machines, tools, equipment and products. A thing is tangible and has shape, form, and other physical characteristics.

Codes

0 Setting up: Adjusting machines or equipment by replacing or altering tools, jigs, fixtures, and attachments to prepare them to perform their functions, change their performance, or restore their proper functioning if they break down. Workers who set up one or a number of machines for other workers or who set up and personally operate a variety of machines are included here.

1 Precision Working: Using body members and/or tools or work aids to work, move, guide, or place objects or materials in situations where ultimate responsibility for the attainment of standards occurs and selection of appropriate tools, objects, or materials, and the adjustment of the tool to the task require exercise of considerable judgment.

2 Operating-Controlling: Starting, stopping, controlling, and adjusting the progress of machines or equipment. Operating machines involves setting up and adjusting the machine or material(s) as the work progresses. Controlling involves observing gages, dials, etc., and turning valves and other devices to regulate factors such as temperature, pressure, flow of liquids, speed of pumps, and reactions of materials.

3 Driving-Operating: Starting, stopping, and controlling the actions of machines or equipment for which a course must be steered, or which must be guided, in order to fabricate, process, and/or move things or people. Involves such activities as observing gages and dials; estimating distances and determining speed and direction of other objects; turning cranks and wheels; pushing or pulling gear lifts or levers. Includes such machines as cranes, conveyor systems, tractors, furnace charging machines, paving machines and hoisting machines. Excludes manually powered machines, such as handtrucks and dollies, and power assisted machines, such as electric wheelbarrows and handtrucks.

4 Manipulating: Using body members, tools, or special devices to work, move, guide, or place objects or materials. Involves some latitude for judgment with regard to precision attained and selecting appropriate tool, object, or material, although this is readily manifest.

5 Tending: Starting, stopping, and observing the functioning of machines and equipment. Involves adjusting materials or controls of the machine, such as changing guides, adjusting timers and temperature gages. Turning valves to allow flow of materials, and flipping switches in response to lights. Little judgment is involved in making these adjustments.

6 Feeding-Offbearing: Inserting, throwing, dumping, or placing materials in or removing them from machines or equipment which are automatic or tended or operated by other workers.

7 Handling: Using body members, handtools, and/or special devices to work, move or carry objects or materials. Involves little or no latitude for judgment with regard to attainment of standards or in selecting appropriate tool, object, or material.

II. Training Times

GED General educational development

This variable was created by taking the highest value of the following three variables: ReasonDT , MathDOT , Lang.

ReasonDT Reasoning Development

Level

6 Apply principles of logical or scientific thinking to a wide range of intellectual and practical problems. Deal with nonverbal symbolism (formulas, scientific equations, graphs, musical notes, etc.) in its most difficult phases. Deal with a variety of abstract and concrete variables. Apprehend the most abstruse classes of concepts.

5 Apply principles of logical or scientific thinking to define problems, collect data, establishments, and draw valid conclusions. Interpret an extensive variety of technical instructions in mathematical or diagrammatic form. Deal with several abstract and concrete variables.

4 Apply principles of rational systems to solve practical problems and deal with a variety of concrete variables in situations where only limited standardization exists. Interpret a variety of instructions furnished in written, oral, diagrammatic, or schedule form.

3 Apply commonsense understanding to carry out instructions furnished in written, oral, or diagrammatic form. Deal with problems involving several concrete variables in or from standardized situations.

2 Apply commonsense understanding to carry out detailed but uninvolved written or oral instructions. Deal with problems involving a few concrete variables in or from standardized situations.

1 Apply commonsense understanding to carry out simple one- or two-step instructions. Deal with standardized situations with occasional or no variables in or from these situations encountered on the job.

Math DOT — Mathematical development

Level

6 Advanced calculus:
Work with limits, continuity, real number systems, mean value theorems, and implicit function theorems.
Modern algebra:
Apply fundamental concepts of theories of groups, rings, and fields. Work with differential equations, linear algebra, infinite series, advanced operations methods, and functions of real and complex variables.
Statistics:
Work with mathematical statistics, mathematical probability and applications, experimental design, statistical inference, and econometrics.

5 Algebra:
Work with exponents and logarithms, linear equations, quadratic equations, mathematical induction and binomial theorem, and permutations.
Calculus:
Apply concepts of analytic geometry, differentiations and integration of algebraic functions with applications.
Statistics:
Apply mathematical operations to frequency distributions, reliability and validity of tests, normal curve, analysis of variance, correlation techniques, chi-square application and sampling theory, and factor analysis.

4 Algebra:
Deal with system of real numbers; linear, quadratic, rational, exponential, logarithmic, angle and circular functions, and inverse functions; related algebraic solution of equations and probability and statistical inference.
Geometry:
Deductive axiomatic geometry, plane and solid; and rectangular coordinates.
Shop Math:
Practical application of fractions, percentages, ratio and proportion, mensuration, logarithms, slide rule, practical algebra, geometric construction, and essentials of trigonometry.

3 Compute discount, interest, profit, and loss; commission, markup, and selling price; ratio and proportion, and percentage. Calculate surfaces, volumes, weights, and measures.
Algebra:
Calculate variables and formulas; monomials and polynomials; ratio and proportion variables; and square roots and radicals.
Geometry:
Calculate plane and solid figures; circumference, area, and volume. Understand kinds of angles, and properties of pairs of angles.

2 Add, subtract, multiply, and divide all units of measure. Perform the four operations with like common and decimal fractions. Compute ratio, rate, and percent. Draw and interpret bar graphs. Perform arithmetic operations involving all American monetary units.

1 Add and subtract two digit numbers.
Multiply and divide 10's and 100's by 2, 3, 4, 5.
Perform the four basic arithmetic operations with coins as part of a dollar.
Perform operations with units such as cup, pint, and quart; inch, foot, and yard; and ounce and pound.

Lang — Language development

Level

6 Reading:
Read literature, book and play reviews, scientific and technical journals, abstracts, financial reports, and legal documents.
Writing:
Write novels, plays, editorials, journals, speeches, manuals, critiques, poetry, and songs.
Speaking:
Conversant in the theory, principles, and methods of effective and persuasive speaking, voice and diction, phonetics and discussion and debate.

5 Same as Level 6.

4 Reading:
Read novels, poems, newspapers, periodicals, journals, manuals, dictionaries, thesauruses, and encyclopedias.
Writing:
Prepare business letters, expositions, summaries, and reports, using prescribed format and conforming to all rules of punctuation, grammar, diction, and style.
Speaking:
Participate in panel discussions, dramatizations, and debates. Speak extemporaneously on a variety of subjects.

3 Reading:
Read a variety of novels, magazines, atlases, and encyclopedias. Read safety rules, instructions in the use and maintenance of shop tools and equipment, and methods and procedures in mechanical drawing and layout work.
Writing:
Write reports and essays with proper format, punctuation, spelling, and grammar, using all parts of speech.
Speaking:
Speak before an audience with poise, voice control, and confidence, using correct English and well-modulated voice.

2 Reading:
Passive vocabulary of 5,000-6,000 words.
Read at rate of 190-215 words per minute.
Read adventure stories and comic books, looking up unfamiliar words in dictionary for meaning, spelling, and pronunciation.
Read instructions for assembling model cars and airplanes.
Writing:
Write compound and complex sentences, using cursive style, proper end punctuation, and employing adjectives and adverbs.
Speaking:
Speak clearly and distinctly with appropriate pauses and emphasis, correct pronunciation, variations in word order, using present, perfect, and future tenses.

1 Reading:
Recognize meaning of 2,500 (two- or three-syllable) words.
Read at rate of 95-120 words per minute.
Compare similarities and differences between words and between series of numbers.

Writing:
Print simple sentences containing subject, verb, and object, and series of numbers, names, and addresses.

Speaking:
Speak simple sentences, using normal word order, and present and past tenses.

SVP Specific vocational preparation

Level	Time
1	Short demonstration only
2	Anything beyond short demonstration up to and including 30 days
3	Over 30 days up to and including 3 months
4	Over 3 months up to and including 6 months
5	Over 6 months up to and including 1 year
6	Over 1 year up to and including 2 years
7	Over 2 years up to and including 4 years
8	Over 4 years up to and including 10 years
9	Over 10 years

III. Aptitudes

Note: These scales have been reversed for purposes of this study. In DOT publications, a high score means a low level.

Quintiles for Rating Aptitudes

5 The top 10 percent of the population. This segment of the population possesses an extremely high degree of the aptitude.

4 The highest third exclusive of the top 10 percent of the population. This segment of the population possesses an above average of high degree of the aptitude.

3 The middle third of the population. This segment of the population possesses a medium degree of the aptitude, ranging from slightly below to slightly above average.

2 The lowest third exclusive of the bottom 10 percent of the population. This segment of the population possesses a below average or low degree of the aptitude.

1 The lowest 10 percent of the population. This segment of the population possesses a negligible degree of the aptitude.

Intel — Intelligence: General learning ability. The ability to "catch on" or understand instructions and underlying principles. Ability to reason and make judgments. Closely related to doing well in school.

Note: Level 1 is not assigned on this aptitude because it is assumed that every job requires at least a "2."

VerbalDT — Verbal: Ability to understand meanings of words and ideas associated with them, and to use them effectively. To comprehend language, to understand relationships between words, and to understand meanings of whole sentences and paragraphs. To present information or ideas clearly.

Num — Numerical: Ability to perform arithmetic operations quickly and accurately.

Spatial — Spatial: Ability to comprehend forms in space and understand relationships of plane and solid objects. May be used in such tasks as blueprint reading and in solving geometry problems. Frequently described as the ability to "visualize" objects of two or three dimensions, or to think visually of geometric forms.

Formper — Form Perception: Ability to perceive pertinent detail in objects or in pictorial or graphic material; to make visual comparisons and discriminations and see slight differences in shapes and shadings of figures and widths and lengths of lines.

Clerical — Clerical Perception: Ability to perceive pertinent detail in verbal or tabular material. To observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arithmetic computation.

Motorcor	Motor Coordination: Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and quickly.
Findex	Finger Dexterity: Ability to move the fingers and manipulate small objects with the fingers rapidly or accurately.
Mandex	Manual Dexterity: Ability to move the hands easily and skillfully. To work with the hands in placing and turning motions.
Iftcoor	Eye-Hand-Foot Coordination: Ability to move the hand and foot coordinately with each other in accordance with visual stimuli.
Colordis	Color Discrimination: Ability to perceive or recognize similarities or differences in colors, or in shades or other values of the same color; to identify a particular color, or to recognize harmonious or contrasting color combinations, or to match colors accurately.

IV. Temperaments: Different types of occupational situations to which workers must adjust.

0	not required
1	required

DCP	Direction, control, and planning
FIF	Feelings, ideas, or facts
Influ	Influencing people
SJC	Sensory or judgmental criteria
MVC	Measurable or verifiable criteria
Depl	Dealing with people
Repcon	Repetitive or continuous processes
PUS	Performing under stress
STS	Set limits, tolerances, or standards
Varch	Variety and change

V. Interests: Preferences for certain types of work activities or experiences, with accompanying rejection of contrary types of activities or experiences. Five pairs of interest factors are provided so that a positive preference for one factor of a pair also implies rejection of the other factor of that pair.

Idata — Communication of data versus activities with things

Codes

-1 Situations involving a preference for activities dealing with things and objects.

vs.

1 Situations involving a preference for activities concerned with people and the communication of ideas.

Iscience — Scientific and technical activities versus business contact

Codes

-1 Situations involving a preference for activities involving business contact with people.

vs.

1 Situations involving a preference for activities of a scientific and technical nature.

Icreate — Abstract and creative versus routine, concrete activities

Codes

-1 Situations involving a preference for activities of a routine, concrete, organized nature.

vs.

1 Situations involving a preference for activities of an abstract and creative nature.

Imach — Activities involving processes, machines, or techniques versus social welfare

Codes

-1 Situations involving a preference for working for people for their presumed good, as in the social welfare sense, or for dealing with people and language in social situations.

vs.

1 Situations involving a preference for activities that are nonsocial in nature, and are carried on in relation to processes, machines, and techniques.

Iproduct — Activities resulting in tangible, productive satisfaction versus prestige, esteem

Codes

-1 Situations involving a preference for activities resulting in tangible, productive satisfaction.

vs.

1 Situations involving a preference for activities resulting in prestige or the esteem of others.

VI. Physical Demands: Those physical activities required of a worker in a job.

Strength — Lifting, carrying, pulling, pushing

Codes

1 Sedentary Work

Lifting 10 lbs. maximum and occasionally lifting and/or carrying such articles as dockets, ledgers, and small tools. Although a sedentary job is defined as one which involves sitting, a certain amount of walking and standing is often necessary in carrying out job duties. Jobs are sedentary if walking and standing are required only occasionally and other sedentary criteria are met.

2 Light Work

Lifting 20 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 10 lbs. Even though the weight lifted may be only a negligible amount, a job is in this category when it requires walking or standing to a significant degree, or when it involves sitting most of the time with a degree of pushing and pulling of arm and/or leg controls.

3 Medium Work

Lifting 50 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 25 lbs.

4 Heavy Work

Lifting 100 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 50 lbs.

5 Very Heavy Work

Lifting objects in excess of 100 lbs. with frequent lifting and/or carrying of objects weighing 50 lbs. or more.

0	not required
1	required

Climbing	Climbing and/or balancing
Stooping	Stooping, kneeling, crouching, and/or crawling
Reaching	Reaching, handling, fingering, and/or feeling
Talking	Talking and/or hearing
Seeing	Seeing

VII. Working Conditions: The physical surroundings of a worker in a specific job.

Location — Outside working conditions

Codes

1 Inside

2 Both inside and outside

3 Outside

0 - not present
1 - present

Cold	Extreme cold
Heat	Extreme heat
Wet	Wet, humid
Noise	Noise, vibration
Hazards	Hazardous conditions
Atcon	Fumes, odors, dust, gases, poor ventilation

Appendix B

Census Occupational Codes: The Amount of DOT and PAQ Data Available for Each and the Aptitude Group no. which each was assigned.

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No.
001	Accountants	11	8	352	29
002	Architects	4	2	10	32
	Computer specialists				
003	Computer programmers	4	2	134	28
004	Computer systems analysts	3	2	77	20
005	Computer specialists, n.e.c.	1	-	-	28
	Engineers				
006	Aeronautical and astronautical engineers	12	-	-	31
010	Chemical engineers	8	1	26	31
011	Civil engineers	15	6	106	31
012	Electrical and electronic engineers	33	11	218	32
013	Industrial engineers	20	9	86	32
014	Mechanical engineers	12	3	20	32
015	Metallurgical and materials engineers	5	2	5	34
020	Mining engineers	2	1	8	32
021	Petroleum engineers	6	-	-	32
022	Sales engineers	6	-	-	33
023	Engineers, n.e.c.	30	2	18	32
024	Farm management advisors	7	3	79	21
025	Foresters and conservationists	21	4	8	21
026	Home management advisors	3	2	63	24
	Lawyers and judges				
030	Judges	3	1	1	30
031	Lawyers	17	8	91	30
	Librarians, archivists, and curators				
032	Librarians	17	9	75	20
033	Archivists and curators	7	-	-	32
	Mathematical specialists				
034	Actuaries	1	1	16	28
035	Mathematicians	3	-	-	28
036	Statisticians	3	1	18	28
	Life and physical scientists				
042	Agricultural scientists	13	2	7	34
043	Atmospheric and space scientists	1	3	1	28
044	Biological scientists	16	2	13	34
045	Chemists	9	4	27	32
051	Geologists	14	1	20	32
052	Marine Scientists	3	2	6	34
053	Physicists and astonomers	7	-	-	32
054	Life and physical scientists, n.e.c.	1	-	-	34
055	Operations and systems researchers and analysts	13	7	97	29
056	Personnel and labor relations workers	29	12	386	30

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No.
	Physicians, dentists, and related practitioners				
061	Chiropractors	2	-	-	27
062	Dentists	8	-	-	36
063	Optometrists	1	-	-	36
064	Pharmacists	1	1	4	34
065	Physicians, medical and osteopathic	28	4	6	36
071	Podiatrists	2	-	-	15
072	Veterinarians	13	-	-	34
073	Health practitioners, n.e.c.	3	-	-	35
	Nurses, dietitians and therapists				
074	Dietitians	9	27	4	21
075	Registered nurses	15	57	11	33
076	Therapists	17	4	18	33
	Health technologists and technicians				
080	Clinical laboratory technologists and technicians	8	3	19	34
081	Dental hygienists	1	-	-	36
082	Health record technologists and technicians	2	1	2	30
083	Radiologic technologists and technicians	3	1	2	36
084	Therapy assistants	3	-	-	27
085	Health technologists and technicians, n.e.c.	24	9	49	24
	Religious workers				
086	Clergymen	1	1	1	30
090	Religious workers, n.e.c.	7	-	-	21
	Social scientists				
091	Economists	4	5	60	29
092	Political scientists	1	-	-	19
093	Psychologists	10	7	40	30
094	Sociologists	1	1	3	28
095	Urban and regional planners	2	2	24	32
096	Social scientists, n.e.c.	12	2	23	28
	Social and recreation workers				
100	Social workers	23	13	113	21
101	Recreation workers	10	5	49	21
	Teachers, college and university				
102	Agriculture teachers	1	-	-	30
103	Atmospheric, earth, marine, and space teachers	-	-	-	-
104	Biology teachers	-	-	-	-
105	Chemistry teachers	-	-	-	-
110	Physics teachers	-	-	-	-
111	Engineering teachers	-	-	-	-
112	Mathematics teachers	-	-	-	-
113	Health specialties teachers	2	-	-	33
114	Psychology teachers	-	-	-	-
115	Business and commerce teachers	-	-	-	-
116	Economics teachers	-	-	-	-

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No
120	History teachers	-	-	-	-
121	Sociology teachers	-	-	-	-
122	Social science teachers, n.e.c.	-	-	-	-
123	Art, drama, and music teachers	5	-	-	24
124	Coaches and physical education teachers	3	-	-	27
125	Education teachers	-	-	-	-
126	English teachers	-	-	-	-
130	Foreign language teachers	-	-	-	-
131	Home economics teachers	-	-	-	-
132	Law teachers	-	-	-	-
133	Theology teachers	-	-	-	-
134	Trade, industrial, and technical teachers	-	-	-	-
135	Miscellaneous teachers, college and university	1	-	-	21
140	Teachers, college and university, subject not specified	3	2	15	30
	Teachers, except college and university				
141	Adult education teachers	4	3	29	24
142	Elementary school teachers	2	2	53	21
143	Prekindergarten and kindergarten teachers	2	1	9	27
144	Secondary school teachers	4	2	9	33
145	Teachers, except college and university, n.e.c.	15	1	2	24
	Engineering and science technicians				
150	Agriculture and biological technicians, except health	13	2	22	13
151	Chemical technicians	8	1	49	22
152	Draftsmen	47	19	379	34
153	Electrical and electronic engineering technicians	32	5	109	25
154	Industrial engineering technicians	7	5	41	23
155	Mechanical engineering technicians	5	3	46	25
156	Mathematical technicians	2	1	4	31
161	Surveyors	11	2	7	22
162	Engineering and science technicians, n.e.c.	64	13	204	22
	Technicians, except health, and engineering and science				
163	Airplane pilots	17	9	41	35
164	Air traffic controllers	6	5	9	23
165	Embalmers	2	-	-	25
170	Flight engineers	-	1	3	-
171	Radio operators	13	2	29	25
172	Tool programmers, numerical control	1	1	1	19
173	Technicians, n.e.c.	21	-	-	23
174	Vocational and educational counselors	7	5	78	30
	Writers, artists, and entertainers				
175	Actors	10	-	-	12

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No.
180	Athletes and kindred workers	29	3	8	14
181	Authors	11	-	-	19
182	Dancers	2	-	-	23
183	Designers	26	-	-	26
184	Editors and reporters	31	8	45	30
185	Musicians and composers	8	1	1	35
190	Painters and sculptors	41	5	30	16
191	Photographers	15	3	6	23
192	Public relations men and publicity writers	3	1	36	30
193	Radio and television announcers	2	-	-	21
194	Writers, artists, and entertainers, n.e.c.	35	2	22	15
195	Research workers, not specified	3	1	5	30
	MANAGERS AND ADMINISTRATORS, EXCEPT FARM				
201	Assessors, controllers, and teasurers; local public administration	4	1	25	30
202	Bank officers and financial managers	18	10	129	30
203	Buyers and shippers, farm products	9	-	-	30
205	Buyers, wholesale and retail trade	1	2	21	21
210	Credit men	1	1	35	30
211	Funeral directors	1	-	-	21
212	Health administrators	16	3	14	30
213	Construction inspectors, public administration	5	3	47	20
215	Inspectors, except construction, public aministration	31	2	7	20
216	Managers and superintendents, building	3	2	32	21
220	Office managers, n.e.c.	2	2	92	21
221	Officers, pilots, and pursers; ship	15	-	-	24
222	Officials and administrators; public administration, n.e.c.	86	22	154	30
223	Officials of lodges, societies, and unions	13	4	19	21
224	Postmasters and mail superintendents	2	1	4	21
225	Purchasing agents and buyers, n.e.c.	8	4	150	30
226	Railroad conductors	6	1	1	12
230	Restaurant, cafeteria, and bar managers	8	2	38	21
231	Sales managers and department heads, retail trade	4	3	48	21
233	Sales managers, except retail trade	3	1	1	21
235	School administrators, college	17	7	14	30
240	School administrators, elementary and secondary	9	5	24	30
245	Managers and administrators, n.e.c.	263	46	1264	30

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No
	SALES WORKERS				
260	Advertising agents and salesmen	5	2	6	21
261	Auctioneers	1	1	1	21
262	Demonstrators	5	-	-	15
264	Hucksters and peddlers	7	1	1	12
265	Insurance agents, brokers, and underwriters	7	4	273	30
266	Newsboys	1	-	-	12
270	Real estate agents and brokers	8	2	9	30
271	Stock and bond salesmen	3	1	4	30
280	Salesmen and sales clerks, n.e.c. Category "280 Salesmen and sales clerks, n.e.c." was subdivided in the Census into 5 occupation groups dependent on industry. The industry codes are shown in parentheses. Code 280 not used here because redundant with codes 281 - 285.				
281	Sales representatives, manufacturing industries (Ind. 107-399) Durable, nondurable	13	-	-	21
282	Sales representatives, wholesale trade (Ind. 017-058, 507-599) agric., mining, wholesale trade	77	12	63	21
283	Sales clerks, retail trade (Ind. 608-699 except 618, 639, 649, 667, 668, 688) except auto, furniture	51	10	58	15
284	Salesmen, retail trade (Ind. 607, 618, 639, 649, 667 668, 688) auto, furniture, appliance fuel	10	2	3	15
285	Salesmen of services and construction (Ind. 067-078, 407-499, 707-947)	35	5	68	21
	CLERICAL AND KINDRED WORKERS				
301	Bank tellers	8	3	54	27
303	Billing clerks	8	5	179	13
305	Bookkeepers	22	14	1083	22
310	Cashiers	20	6	144	24
311	Clerical assistants, social welfare	1	-	-	18
312	Clerical supervisors, n.e.c.	37	20	188	21
313	Collectors, bill and account	7	2	52	12
314	Counter clerks, except food	15	2	67	12
315	Dispatchers and starters, vehicle	20	8	77	12
320	Enumerators and interviewers	3	1	1	12
321	Estimators and investigators, n.e.c.	46	18	259	20
323	Expediters and production controllers	55	11	244	11
325	File clerks	13	5	305	14
326	Insurance adjusters, examiners, and investigators	3	4	227	21
330	Library attendants and assistants	10	5	113	11
331	Mail carriers, post office	4	1	3	14

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No
332	Mail handlers, except post office	11	1	107	11
333	Messengers and office boys	9	2	46	5
334	Meter readers, utilities	3	3	149	21
	Office machine operators				
341	Bookkeeping and billing machine operators	6	5	68	25
342	Calculating machine operators	5	4	72	13
343	Computer and peripheral equipment operators	5	5	194	13
344	Duplicating machine operators	6	4	56	4
345	Key punch operators	3	3	315	13
350	Tabulating machine operators	3	1	16	13
355	Office machine operators, n.e.c.	24	6	74	4
360	Payroll and timekeeping clerks	6	3	135	23
361	Postal clerks	1	1	23	7
362	Proofreaders	6	4	65	10
363	Real estate appraisers	1	1	33	30
364	Receptionists	14	8	183	12
	Secretaries				
370	Secretaries, legal	1	1	24	27
371	Secretaries, medical	1	1	4	27
372	Secretaries, n.e.c.	3	3	890	27
374	Shipping and receiving clerks	23	10	303	13
375	Statistical clerks	45	15	309	13
376	Stenographers	6	2	322	17
381	Stock clerks and storekeepers	36	15	562	11
382	Teacher aides, exc. school monitors	4	3	42	24
383	Telegraph messengers	-	-	-	-
384	Telegraph operators	8	-	-	15
385	Telephone operators	10	6	127	15
390	Ticket, station, and express agents	25	7	56	21
391	Typists	14	10	766	16
392	Weighers	23	4	75	4
394	Miscellaneous clerical workers	157	41	1589	14
395	Not specified clerical workers	11	-	-	11
	CRAFTSMEN AND KINDRED WORKERS				
401	Automobile accessories installers	8	-	-	4
402	Bakers	18	1	3	4
403	Blacksmiths	4	1	8	4
404	Boilermakers	7	5	50	14
405	Bookbinders	11	-	-	4
410	Brickmasons and stonemasons	21	1	19	13
411	Brickmasons and stonemasons, apprentices	4	1	19	17

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No
412	Bulldozer operators	5	4	18	4
413	Cabinetmakers	5	-	-	16
415	Carpenters	38	3	143	13
416	Carpenter apprentices	4	-	-	25
420	Carpet installers	1	-	-	25
421	Cement and concrete finishers	13	3	26	4
422	Compositors and typesetters	17	1	9	13
423	Printing trades apprentices, exc. pressmen	14	-	-	16
424	Cranemen, derrickmen, and hoistmen	49	5	64	4
425	Decorators and window dressers	3	2	6	25
426	Dental laboratory technicians	14	5	31	16
430	Electricians	19	10	512	17
431	Electrician apprentices	4	1	11	16
433	Electric power linemen and cablemen	26	10	360	14
434	Electrotypers and stereotypers	4	1	1	14
435	Engravers, exc. photoengravers	41	3	9	4
436	Excavating, grading, and road machine operators; exc. bulldozer	35	6	133	4
440	Floor layers, exc. tile setters	3	-	-	13
441	Foremen, n.e.c.	733	45	335	15
442	Forgemen and hammermen	16	1	1	4
443	Furniture and wood finishers	4	2	10	2
444	Furriers	6	-	-	7
445	Glaziers	10	1	1	4
446	Heat treaters, annealers, and temperers	18	2	7	4
450	Inspectors, scalers, and graders; log and lumber	13	4	34	4
452	Inspectors, n.e.c.	103	16	232	13
453	Jewelers and watchmakers	48	-	-	7
454	Job and die setters, metal	54	4	15	13
455	Locomotive engineers	2	2	37	4
456	Locomotive firemen	2	-	-	13
461	Machinists	13	7	168	25
462	Machinist apprentices	4	1	3	25
	Mechanics and repairmen				
470	Air conditioning, heating, and refrigeration	13	2	20	13
471	Aircraft	22	3	9	16
472	Automobile body repairmen	9	2	11	13
473	Automobile mechanics	33	5	132	13
474	Automobile mechanic apprentices	1	1	3	16
475	Data processing machine repairmen	-	-	-	-
480	Farm implement	8	3	28	13
481	Heavy equipment mechanics, incl. diesel	81	21	439	16
482	Household appliance and accessory installers and mechanics	20	13	165	13
483	Loom fixers	6	1	4	4

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No
484	Office machine	7	2	5	16
485	Radio and television	15	6	57	16
486	Railroad and car shop	22	4	56	13
491	Mechanic, exc. auto, apprentices	10	3	37	25
492	Miscellaneous mechanics and repairmen	206	26	193	13
495	Not specified mechanics and repairmen	7	-	-	4
501	Millers; grain, flour and feed	22	-	-	4
502	Millwrights	3	3	185	26
503	Molders, metal	19	3	4	4
504	Molder apprentices	2	-	-	16
505	Motion picture projectionists	3	-	-	14
506	Opticians, and lens grinders and polishers	32	-	-	13
510	Painters, construction and maintenance	10	3	89	13
511	Painter apprentices	3	-	-	16
512	Paperhangers	-	-	-	-
514	Pattern and model makers, exc. paper	68	1	1	16
515	Photoengravers and lithographers	20	3	11	16
516	Piano and organ tuners and repairmen	13	-	-	13
520	Plasterers	6	1	2	13
521	Plasterer apprentices	1	-	-	13
522	Plumbers and pipe fitters	19	4	138	14
523	Plumber and pipe fitter apprentices	2	1	27	25
525	Power station operators	16	5	123	14
530	Pressmen and plate printers, printing	47	16	102	4
531	Pressman apprentices	8	1	2	13
533	Rollers and finishers, metal	27	1	2	4
534	Roofers and slaters	3	-	-	14
535	Sheetmetal workers and tinsmiths	13	3	45	13
536	Sheetmetal apprentices	1	1	5	25
540	Shipfitters	3	-	-	16
542	Shoe repairmen	10	-	-	7
543	Sign painters and letterers	5	-	-	16
545	Stationary engineers	48	17	318	13
546	Stone cutters and stone carvers	14	-	-	4
550	Structural metal craftsmen	16	5	69	13
551	Tailors	4	-	-	25
552	Telephone installers and repairmen	21	10	86	14
554	Telephone linemen and splicers	6	3	9	14
560	Tile setters	7	-	-	4
561	Tool and die makers	29	11	78	16
562	Tool and die maker apprentices	6	3	18	25
563	Upholsterers	25	1	1	4
571	Specified craft apprentices, n.e.c.	51	6	51	16
572	Not specified apprentices	5	1	17	16
575	Craftsmen and kindred workers, n.e.c.	44	1	7	13
580	Former members of the Armed Forces	-	-	-	-

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No
	OPERATIVES, EXCEPT TRANSPORT				
601	Asbestos and insulation workers	9	1	2	4
602	Assemblers	376	17	144	4
603	Blasters and powdermen	12	-	-	4
604	Bottling and canning operatives	3	2	186	4
605	Chainmen, rodmen, and axmen; surveying	-	2	61	-
610	Checkers, examiners, and inspectors; manufacturing	451	26	223	4
611	Clothing ironers and pressers	41	3	5	4
612	Cutting operatives, n.e.c.	279	19	117	4
613	Dressmakers and seamstresses, except factory	6	-	-	16
614	Drillers, earth	11	-	-	13
615	Dry wall installers and lathers	6	-	-	17
620	Dyers	41	-	-	4
621	Filers, polishers, sanders, and buffers	144	10	37	4
622	Furnacemen, smeltermen, and pourers	74	9	34	4
623	Garage workers and gas station attendants	8	1	1	5
624	Graders and sorters, manufacturing	84	2	19	4
625	Produce graders and packers, except factory and farm	13	2	17	4
626	Heaters, metal	5	-	-	1
630	Laundry and dry cleaning operatives, n.e.c.	55	3	3	4
631	Meat cutters and butchers, exc. manufacturing	6	2	7	7
633	Meat cutters and butchers, manufacturing	49	1	3	4
634	Meat wrappers, retail trade	-	-	-	-
635	Metal platers	10	2	4	13
636	Milliners	3	-	-	4
640	Mine operatives, n.e.c.	102	4	8	4
641	Mixing operatives	194	13	48	4
642	Oilers and greasers,exc, auto	9	1	52	4
643	Packers and wrappers, except meat and produce	68	12	212	4
644	Painters, manufactured articles	73	7	44	4
645	Photographic process workers	50	5	30	13
	Precision machine operatives				
650	Drill press operatives	32	7	91	4
651	Grinding machine operatives	60	16	89	4
652	Lathe and milling machine operatives	85	18	154	4
653	Precision machine operatives, n.e.c.	26	13	78	4
656	Punch and stamping press operatives	35	6	29	4
660	Riveters and fasteners	26	5	16	4
661	Sailors and deckhands	8	-	-	14
662	Sawyers	76	9	30	4
663	Sewers and stitchers	182	4	39	7
664	Shoemaking machine operatives	142	-	-	4
665	Solderers	8	2	9	4
666	Stationary firemen	18	5	85	4

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No
	Textile operatives				
670	Carding, lapping, and combing operatives	32	6	19	4
671	Knitters, loopers, and toppers	14	-	-	7
672	Spinners, twisters, and winders	61	8	48	4
673	Weavers	17	3	4	4
674	Textile operatives, n.e.c.	170	7	21	4
680	Welders and flame-cutters	44	8	140	4
681	Winding operatives, n.e.c.	66	8	102	4
690	Machine operatives, miscellaneous specified	1774	173	1302	4
692	Machine operatives, not specified	28	1	37	4
694	Miscellaneous operatives	775	48	411	4
695	Not specified operatives	30	5	112	4
	TRANSPORT EQUIPMENT OPERATIVES				
701	Boatmen and canalmen	6	-	-	5
703	Bus drivers	4	1	1	15
704	Conductors and motormen, urban rail transit	1	-	-	24
705	Deliverymen and routemen	9	2	4	2
706	Fork lift and tow motor operatives	5	1	120	4
710	Motormen; mine, factory, logging camp, etc.	16	1	4	4
711	Parking attendants	2	-	-	3
712	Railroad brakemen	4	2	30	5
713	Railroad switchmen	3	-	-	4
714	Taxicab drivers and chauffeurs	11	3	23	5
715	Truck drivers	17	7	234	4
	LABORERS, EXCEPT FARM				
740	Animal caretakers exc. farm	12	5	28	5
750	Carpenters' helpers	1	-	-	4
751	Construction laborers, exc. carpenters' helpers	16	8	106	4
752	Fishermen and oystermen	30	-	-	4
753	Freight and material handlers	74	19	305	1
754	Garbage collectors	3	-	-	5
755	Gardeners and groundkeepers, exc. farm	14	7	71	4
760	Longshoremen and stevedores	11	1	1	1
761	Lumbermen, raftsmen, and woodchoppers	28	7	22	4
762	Stock handlers	9	3	90	1
763	Teamsters	1	-	-	4
764	Vehicle washers and equipment cleaners	17	5	15	4
770	Warehousemen, n.e.c.	-	-	-	-
780	Miscellaneous laborers	334	18	64	4
785	Not specified laborers	6	1	4	4

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No. PAQ Titles	No. PAQ Responses	Aptitude Group No
	FARMERS AND FARM MANAGERS				
801	Farmers (owners and tenants)	19	1	5	13
802	Farm managers	6	3	5	21
	FARM LABORERS AND FARM FOREMEN				
821	Farm foremen	25	2	17	15
822	Farm laborers, wage workers	59	10	43	4
823	Farm laborers, unpaid family workers	-	-	-	-
824	Farm service laborers, self-employed	4	-	-	14
	SERVICE WORKERS, EXC. PRIVATE HOUSEHOLD				
	Cleaning service workers				
901	Chambermaids and maids, except private household	1	-	-	1
902	Cleaners and charwomen	8	5	180	1
903	Janitors and sextons	5	4	125	4
	Food service workers				
910	Bartenders	3	1	2	11
911	Busboys	3	-	-	3
912	Cooks, except private household	32	6	19	14
913	Dishwashers	2	-	-	1
914	Food counter and fountain workers	8	3	11	6
915	Waiters	15	2	3	15
916	Food service workers, n.e.c., except private household	14	5	94	5
	Health service workers				
921	Dental assistants	2	1	4	14
922	Health aides, exc. nursing	7	2	7	14
923	Health trainees	-	-	-	-
924	Lay midwives	2	-	-	18
925	Nursing aides, orderlies, and attendants	8	6	41	15
926	Practical nurses	3	2	24	15
	Personal service workers				
931	Airline stewardesses	2	2	32	21
932	Attendants, recreation and amusement	44	2	3	12
933	Attendants, personal service, n.e.c.	44	3	10	3
934	Baggage porters and bellhops	7	-	-	3
935	Barbers	2	1	3	18
940	Boarding and lodging house keepers	3	1	1	12
941	Bootblacks	1	-	-	3
942	Child care workers, exc. private household	3	1	3	6
943	Elevator operators	3	1	2	3
944	Hairdressers and cosmetologists	11	1	3	18

Occupation Code	Professional, Technical, and Kindred Workers	No. Dot Titles	No.PAQ Titles	No. PAQ Responses	Aptitude Group No
945	Personal service apprentices	2	-	-	18
950	Housekeepers, exc. private household	17	1	49	12
952	School monitors	-	-	-	-
953	Ushers, recreation and amusement	2	-	-	2
954	Welfare service aides	-	2	4	-
	Protective service workers				
960	Crossing guards and bridge tenders	8	1	2	2
961	Firemen, fire protection	15	8	291	14
962	Guards and watchmen	20	11	257	12
963	Marshals and constables	-	-	-	-
964	Policemen and detectives	42	25	594	21
965	Sheriffs and bailiffs	11	8	108	12
	PRIVATE HOUSEHOLD WORKERS				
980	Child care workers, private household	4	-	-	3
981	Cooks, private household	2	-	-	11
982	Housekeepers, private household	3	1	27	12
983	Laundresses, private household	2	-	-	1
984	Maids and servants, private household	4	-	-	2
	OCCUPATION NOT REPORTED				
995	This code is used to identify not reported occupations in surveys where the not reported cases are not allocated.				
	ALLOCATION CATEGORIES				
196	Professional, technical, and kindred workers-allocated				
246	Managers and administrators, except farm-allocated				
296	Sales workers-allocated				
396	Clerical and kindred workers-allocated				
586	Craftsmen and kindred workers-allocated				
696	Operatives, except transport-allocated				
726	Transport equipment operatives-allocated				
796	Laborers, except farm-allocated				
806	Farmers and farm managers-allocated				
846	Farm laborers and farm foremen-allocated				
976	Service workers, exc. private household-allocated				
986	Private household workers-allocated				

These codes were not used

Those returns from the Population Census which do not have an occupation entry are allocated among the major occupation groups during computer processing.

Appendix C

Academic Abilities and Mental Activities of Different Occupations

Key

Numbers next to the group numbers are percentiles for the group average on the variable in question.

· A low score

* A moderate score

X A high score

- Data are not available.

Note

Data for the PAQ variables have been omitted pending permission from PAQ Services to release these data (per our agreement in purchasing their proprietary data).

JOB ATTRIBUTE:	ACADEMIC ABILITIES								MENTAL ACTIVITIES											
	VERBAL	LANG	REASONDT	INTEL	MATHOT	NUM	MATHPAQ	DATA	DECIDE	REASONPQ	PLAN	COMBINE	ANALYZE	COMPILE	CODE	TRANSCRB	WRITE	PRECISE	DETAIL
CORRELATION WITH: ACADEMIC ABILITIES	.93	.91	.91	.90	.88	.88	.68	.88	.67	.70	.68	.73	.71	.73	.58	.32	.76	.34	.38
MOTOR ABILITIES	-.16	-.13	-.06	-.07	-.01	-.03	-.04	-.11	-.28	-.26	-.32	-.34	-.24	-.34	-.12	-.18	-.37	.12	-.01
DEALING WITH PEOPLE	.49	.46	.38	.38	.26	.26	.17	.46	.53	.46	.52	.55	.43	.55	.26	.34	.56	.05	.09
GROUP 1	2	7	2	5	5	5		7											
626 HEATERS, METAL	•	•	•	•	•	•		•											
753 FREIGHT & MATERIAL HANDLERS	•	•	•	•	•	•		•											
760 LONGSHOREMEN & STEVEDORES	•	•	•	•	•	•		•											
762 STOCK HANDLERS	•	•	•	•	•	•		•											
901 CHMBRMDS. & MDS.,EXC. PRI. HSHD.	•	•	•	•	•	•		•											
902 CLEANERS & CHARWOMEN	•	•	•	•	•	•		•											
913 DISHWASHERS	•	•	•	•	•	•		•											
983 LAUNDRESSES, PRIVATE HOUSEHOLD	•	•	•	•	•	•		•											
GROUP 2	27	27	18	17	22	22		27											
443 FURNITURE & WOOD FINISHERS	•	•	*	*	•	•		*											
709 DELIVERYMEN & ROUTEMEN	•	•	•	*	•	•		*											
953 USHERS,RECREATION & AMUSEMENT	*	•	*	*	•	•		*											
960 CRUSSING GUARDS & BRIDGE TENDERS	*	•	*	*	•	•		*											
984 MAIDS & SERVANTS,PRIV. HOUSEHOLD	•	•	•	•	•	•		•											
GROUP 3	21	15	11	9	14	7		21											
711 PARKING ATTENDANTS	•	•	*	*	•	•		*											
911 BUSBOYS	•	•	•	•	•	•		•											
933 ATTENDANTS, PERSONAL SERVICE,NEC	*	•	*	*	•	•		•											
934 BAGGAGE PORTERS & BELLHOPS	•	•	•	•	•	•		*											
941 BOOTBLACKS	•	•	•	•	•	•		•											
943 ELEVATOR OPERATORS	*	•	•	•	•	•		•											
980 CHILD CARE WORKERS,PRI. HOUSEHD.	•	*	*	•	•	•		•											
GROUP 4	15	15	16	14	17	12		18											
344 DUPLICATING MACHINE OPERATORS	•	•	*	*	•	•		•											
355 OFFICE MACHINE OPERATORS, NEC	•	•	*	*	•	•		•											

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392	WEIGHERS	•	•	•	•	•	•	•
401	AUTOMOBILE ACCESSORIES INSTALLER	•	•	*	*	•	•	•
402	BAKERS	•	•	*	*	•	•	*
403	BLACKSMITHS	•	•	*	*	*	*	*
405	BOOKBINDERS	•	•	•	•	•	•	•
412	BULLDOZER OPERATORS	•	•	*	*	•	•	•
421	CEMENT & CONCRETE FINISHERS	•	•	*	*	•	•	*
424	CRANEMEN, DERRICKMEN, & HOISTMEN	•	•	*	*	•	•	•
435	ENGRAVERS, EXC. PHOTOENGRAVERS	•	•	*	*	•	•	*
436	EXCAV,GRAD,& RU MACH OP; EX BOZR	•	•	*	*	•	•	•
442	FORGEMEN & HAMMERMEN	•	•	*	*	•	•	*
445	GLAZIERS	•	•	*	*	•	•	*
446	HT. TREATERS,ANNEAL.,& TEMPERERS	•	•	*	*	•	•	•
450	INSP.,SCALERS,& GRAD.;LOG & LUM.	•	•	*	*	•	•	•
455	LOCOMOTIVE ENGINEERS	*	*	*	*	•	•	•
483	LOOM FIXERS	•	*	*	*	•	•	*
495	NOT SPEC. MECHANICS & REPAIRMEN	•	•	•	*	•	•	•
501	MILLERS; GRAIN, FLOUR, & FEED	•	•	•	•	•	•	•
503	MOLDERS, METAL	•	•	*	*	•	•	•
530	PRSSMN. & PLATE PRNTRS.,PRINTING	•	•	*	*	•	•	*
533	ROLLERS & FINISHERS, METAL	•	•	*	*	•	•	*
546	STONE CUTTERS & STONE CARVERS	•	•	*	*	•	•	•
560	TILE SETTERS	•	•	*	*	•	•	*
563	UPHOLSTERERS	•	•	•	*	•	•	•
601	ASBESTOS & INSULATION WORKERS	•	•	•	•	•	•	•
602	ASSEMBLERS	•	•	•	•	•	•	•
603	BLASTERS & POWDERMEN	•	•	*	*	•	•	*
604	BOTTLING & CANNING OPERATIVES	•	•	•	•	•	•	•
610	CHECKERS,EXAM.,& INSPECT.;MANUF.	•	•	*	*	•	•	•
611	CLOTHING IRONERS & PRESSERS	•	•	•	•	•	•	•
612	CUTTING OPERATIVES, NEC	•	•	•	•	•	•	•
620	DYERS	•	•	*	*	•	•	•
621	FILERS,POLISH.,SANDERS,& BUFFERS	•	•	•	•	•	•	•
622	FURNACEMEN,SMELTERMEN,& POURERS	•	•	*	*	•	•	•
624	GRADERS & SORTERS, MANUFACTURING	•	•	•	•	•	•	•
625	PROD GRAD & PACK,EXC FACT & FARM	•	•	•	•	•	•	•
630	LAUN. & DRY CLEAN. OPERATIV.,NEC	•	•	•	•	•	•	•
633	MEAT CUTTERS & BUTCHERS,MANUF.	•	•	•	•	•	•	•
636	MILLINERS	•	•	•	*	•	•	•
640	MINE OPERATIVES,NEC	•	•	•	*	•	•	•
641	MIXING OPERATIVES	•	•	•	•	•	•	•
642	OILERS & GREASERS, EXC. AUTO	•	•	•	•	•	•	•
643	PACKERS & WRAP.,EX. MEAT & PROD.	•	•	•	•	•	•	•
644	PAINTERS, MANUFACTURED ARTICLES	•	•	•	•	•	•	•
650	DRILL PRESS OPERATIVES	•	•	*	*	•	•	•
651	GRINDING MACHINE OPERATIVES	•	•	*	*	•	•	•
652	LATHE & MILLING MACH. OPERATIVES	•	•	*	*	•	•	•
653	PRECISION MACH. OPERATIVES, NEC	•	•	*	*	•	•	•
656	PUNCH & STAMP. PRESS OPERATIVES	•	•	•	•	•	•	•
660	RIVETERS & FASTENERS	•	•	•	•	•	•	•
662	SAWYERS	•	•	*	*	•	•	•
664	SHOEMAKING MACHINE OPERATIVES	•	•	•	•	•	•	•
665	SOLDERERS	•	•	•	•	•	•	•
666	STATIONARY FIREMEN	•	•	*	*	•	•	•
670	CARDING,LAPPING, & COMBING OPER.	•	•	•	•	•	•	•

JOB ATTRIBUTE:	ACADEMIC ABILITIES							MENTAL ACTIVITIES									
	VERBAL DT	LANG	REASOND T	INTEL	MATHDOT	NUM	MATHPAQ	DATA	DECIDE	REASONPQ	PLAN	COMBINE	ANALYZE	COMPILE	CODE	TRANSCRB	WRITE	PRECISE	DETAIL
GROUP 4 -- CONT.																			
672 SPINNERS,TWISTERS,& WINDERS	.	.	.	.	.	.	.												
673 WEAVERS	.	.	*	*	.	.	.												
674 TEXTILE OPERATIVES,NEC	.	.	.	.	.	.	.												
680 WELDERS & FLAME-CUTTERS	.	*	*	*	*	*	*												
681 WINDING OPERATIVES, NEC	.	.	.	.	.	.	.												
690 MACHINE OPERATIVES, MISC. SPEC.	.	.	.	.	.	.	.												
692 MACHINE OPERATIVES,NOT SPECIFIED	.	.	.	.	.	.	.												
694 MISCELLANEOUS OPERATIVES	.	.	.	.	.	.	.												
695 NOT SPECIFIED OPERATIVES	.	.	.	.	.	.	.												
706 FORK LIFT & TOW MOTOR OPERATIVES	.	.	.	.	.	.	.												
710 MTRMEN.;MINE,FACT.,LOG. CAMP,ETC	.	.	*	*	.	.	.												
713 RAILROAD SWITCHMEN	*	*	*	*	.	.	*												
715 TRUCK DRIVERS	.	.	*	*	.	.	.												
750 CARPENTERS' HELPERS	.	.	.	.	.	.	.												
751 CONSTR. LABORERS,EX. CARP. HELP.	.	.	.	*	.	.	.												
752 FISHERMEN & OYSTERMEN	.	.	.	*	.	.	.												
755 GARDENERS & GRNDSKPRS.,EXC.FARM	.	.	*	*	.	.	.												
761 LUMBERMEN,RAFTSMEN,& WOODCHOP.	.	.	.	.	.	.	.												
763 TEAMSTERS	.	.	*	*	.	.	.												
764 VEHICLE WASHERS & EQ. CLEANERS	.	.	.	.	.	.	.												
780 MISC. LABORERS	.	.	.	.	.	.	.												
785 NOT SPECIFIED LABORERS	.	.	.	.	.	.	.												
822 FARM LABORERS, WAGE WORKERS	.	.	.	.	.	.	.												
903 JANITORS & SEXTONS	.	.	.	.	.	.	.												
GROUP 5	27	20	19	25	19	23	22												
333 MESSENGERS & OFFICE BOYS	.	.	.	*	.	.	.												
623 GARAGE WORKERS & GAS STAT. ATT.	.	.	.	*	.	.	.												
701 BOATMEN & CANALMEN	*	*	*	*	.	.	*												
712 RAILROAD BRAKEMEN	*	.	*	*	.	.	.												
714 TAXICAB DRIVERS & CHAUFFEURS	.	.	*	*	.	.	.												
740 ANIMAL CARETAKERS, EXC. FARM	.	.	*	*	.	.	.												
754 GARBAGE COLLECTORS	.	.	.	*	.	.	.												
916 FD SERV WORKERS,NEC EX PRI HSHD	.	.	*	*	.	.	.												
GROUP 6	24	28	16	12	17	12	8												

914	FOOD COUNTER & FOUNTAIN WORKERS	.	.	.	.	.	.	.
942	CHILD CARE WORKERS,EX. PR. HSHD.	*	*	*	*	.	.	.
GROUP 7		18	17	22	21	23	22	19
361	POSTAL CLERKS	.	.	*	*	.	.	.
444	FURRIERS	.	.	*	*	.	.	*
453	JEWELERS & WATCHMAKERS	.	.	*	*	.	.	*
542	SHOE REPAIRMEN	.	.	*	*	.	.	*
631	MEAT CUTTERS & BUTCHERS,EXC MAN.	.	.	*	*	.	.	.
683	SEWERS & STITCHERS	.	.	.	.	.	.	.
671	KNITTERS,LOOPERS,& TOPPERS	.	.	*	.	.	.	.
GROUP 8 -- NO OCCUPATIONS IN THIS GROUP								
GROUP 9 -- NO OCCUPATIONS IN THIS GROUP								
GROUP 10		71	66	60	66	15	26	31
362	PROOFREADERS	X	*	*	X	.	.	*
GROUP 11		46	42	35	33	37	46	40
323	EXPEDITERS & PRODUCTION CONTROL.	*	*	*	*	.	*	*
332	LIBRARY ATTENDANTS & ASSISTANTS	*	*	*	*	.	*	*
334	MAIL HANDLERS,EXCEPT POST OFFICE	*	*	*	*	.	*	*
381	STOCK CLERKS & STOREKEEPERS	*	.	*	*	.	*	*
395	NOT SPECIFIED CLERICAL WORKERS	*	*	*	*	.	*	*
910	BARTENDERS	*	.	.	*	.	.	.
981	COOKS, PRIVATE HOUSEHOLD	*	*	*	*	.	*	X
GROUP 12		50	47	38	36	40	39	52
175	ACTORS	*	*	*	X	.	.	X
226	RAILROAD CONDUCTORS	*	*	*	*	*	.	X
264	HUCKSTERS & PEDDLERS	.	.	.	.	.	.	*
266	NEWSBOYS	*	.	.	.	.	.	*
313	COLLECTORS, BILL & ACCOUNT	*	*	*	*	*	*	*
314	COUNTER CLERKS, EXCEPT FOOD	*	*	*	*	.	*	*
315	DISPATCHERS & STARTERS, VEHICLE	*	*	*	*	*	*	X
320	ENUMERATORS & INTERVIEWERS	*	.	*	*	.	*	X
364	RECEPTIONISTS	*	*	*	*	.	*	*
932	ATTENDANTS, RECREAT. & AMUSEMENT	*	.	*	*	.	.	.
940	BOARDING & LODGING HOUSE KEEPERS	*	*	*	*	.	*	*
950	HOUSEKEEPERS,EXC. PRIV. HSEHLD.	*	*	*	*	*	*	X
962	GUARDS & WATCHMEN	*	.	*	*	.	.	.
965	SHERIFFS & BAILIFFS	*	*	*	*	.	.	*
982	HOUSEKEEPERS, PRIVATE HOUSEHOLD	*	*	*	*	.	.	*

JOB ATTRIBUTE:	ACADEMIC ABILITIES							MENTAL ACTIVITIES								
	VERBAL DOT	LANG	READ DOT	INTEL	MATH DOT	NUM	MAPA Q	DATA	DECIDE	REASON	PLAN	COMBINE	ANALYZE	COMPILE	CODE	TRANSCRB	WRITE	PRECISE	DETAIL
GROUP 13	36	37	41	37	43	45		38											
150 AGRIC. & BIO. TECH., EXC. HEALTH	*	*	*	*	*	*		*											
303 BILLING CLERKS	*	*	*	*	*	*		*											
342 CALCULATING MACHINE OPERATORS	.	.	*	*	.	*		*											
343 COMPUTER & PERIPH. EQUIP. OPER.	*	*	*	*	.	.		*											
345 KEY PUNCH OPERATORS	*	*	*	*	.	.		.											
350 TABULATING MACHINE OPERATORS	*	.	*	*	.	*		.											
374 SHIPPING & RECEIVING CLERKS	*	.	*	*	.	*		*											
375 STATISTICAL CLERKS	*	*	*	*	*	*		*											
410 BRICKMASONS & STONEMASONS	.	.	*	*	.	*		*											
415 CARPENTERS	*	.	*	*	*	*		*											
422 COMPOSITORS & TYPESETTERS	*	.	*	*	.	*		*											
440 FLOOR LAYERS, EXC. TILE SETTERS	*	.	*	*	.	*		*											
452 INSPECTORS, NEC	*	*	*	*	.	.		*											
454 JOB & DIE SETTERS, METAL	*	*	*	*	*	*		*											
456 LOCOMOTIVE FIREMEN	*	*	*	*	.	.		*											
470 AIR CON.,HT.,& REF. MECH. & REP.	*	*	*	*	*	.		*											
472 AUTOMOBILE BODY REPAIRMEN	*	.	*	*	.	.		*											
473 AUTOMOBILE MECHANICS	*	*	*	*	.	.		*											
480 FARM IMPLEMENT MECH. & REPAIRMEN	*	*	*	*	*	*		*											
482 HSEHLD APPL. & ACC. INST. & MECH	.	*	*	*	*	.		*											
486 RLRD. & CAR SHOP MECH. & REPRMN.	*	*	*	*	*	*		*											
492 MISC. MECHANICS & REPAIRMEN	*	.	*	*	.	.		*											
506 OPTIC., & LENS GRIND. & POLISH.	*	*	*	*	.	*		.											
510 PAINTERS,CONSTRUCTION & MAINTEN.	*	.	*	*	.	*		*											
515 PIANO & ORGAN TUNERS & REPAIRMEN	.	*	*	*	.	.		*											
520 PLASTERERS	*	*	*	*	*	*		*											
521 PLASTERER APPRENTICES	*	*	*	*	.	.		*											
531 PRESSMAN APPRENTICES	*	*	*	*	.	*		*											
535 SHEETMETAL WORKERS & TINSMITHS	.	.	*	*	.	*		*											
545 STATIONARY ENGINEERS	*	*	*	*	.	*		*											
550 STRUCTURAL METAL CRAFTSMEN	*	.	*	*	.	.		*											
575 CRAFTSMEN & KINDRED WORKERS, NEC	.	.	*	*	.	*		*											
614 DRILLERS, EARTH	.	.	*	*	.	.		.											
635 METAL PLATERS	*	.	*	*	.	.		*											
645 PHOTOGRAPHIC PROCESS WORKERS	*	.	*	*	.	.		*											
801 FARMERS(OWNERS & TENANTS)	*	*	*	*	*	*		X											

GROUP 14		46	47	49	54	51	46	46
100	ATHLETES & KINDRED WORKERS	*	*	*	*	*	.	*
325	FILE CLERKS	*	*	*	*	.	.	*
331	MAIL CARRIERS, POST OFFICE	*	*	*	*	*	*	*
394	MISCELLANEOUS CLERICAL WORKERS	*	*	*	*	.	*	*
404	BOILERMAKERS	*	.	*	*	*	*	*
433	ELECT. POWER LINEMEN & CABLEMEN	*	*	*	*	*	*	X
434	ELECTROTYPERS & STEREOTYPERS	*	*	*	*	.	*	*
505	MOTION PICTURE PROJECTIONISTS	*	.	*	*	.	.	*
522	PLUMBERS & PIPE FITTERS	*	*	*	*	*	*	*
525	POWER STATION OPERATORS	*	*	*	*	*	*	*
534	ROOFERS & SLATERS	.	.	*	*	.	*	*
552	TELEPHONE INSTALLERS & REPAIRMEN	*	*	*	*	*	*	*
554	TELEPHONE LINEMEN & SPLICERS	*	*	*	*	*	*	*
661	SAILORS & DECKHANDS	*	.	*	*	.	.	*
824	FARM SERVICE LABORERS, SELF-EMPL.	*	*	*	*	.	.	*
912	COOKS, EXC. PRIV. HOUSEHOLD	*	*	*	*	.	.	*
921	DENTAL ASSISTANTS	*	*	*	*	*	*	.
922	HEALTH AIDES, EXC. NURSING	*	*	*	*	*	*	*
961	FIREMEN, FIRE PROTECTION	*	*	*	*	*	*	X

GROUP 15		48	61	52	55	51	44	53
71	PODIATRISTS	*	X	X	X	*	*	X
194	WRITERS, ARTISTS, & ENTERTAIN., NEC	*	*	*	*	*	.	X
262	DEMONSTRATORS	*	*	*	*	*	*	*
283	SALES CLERKS, RETAIL TRADE	*	*	*	*	*	*	*
284	SALESMEN, RETAIL TRADE	*	*	*	*	*	*	*
384	TELEGRAPH OPERATORS	*	*	*	*	.	*	*
385	TELEPHONE OPERATORS	*	*	*	*	.	.	*
441	FOREMEN, NEC	*	*	*	*	*	*	X
703	BUS DRIVERS	*	.	*	*	.	.	*
821	FARM FOREMEN	*	*	*	*	*	*	X
915	WAITERS	*	*	*	*	.	.	*
925	NURS. AIDES, ORDERLIES, & ATTEND.	*	*	*	*	.	.	.
926	PRACTICAL NURSES	*	*	*	*	*	.	*

GROUP 16		44	47	53	58	55	53	46
190	PAINTERS & SCULPTORS	*	*	*	X	.	*	X
391	TYPISTS	*	*	*	*	.	.	*
413	CABINETMAKERS	*	*	*	*	*	*	*
423	PRINT. TRADES APPR., EX. PRESSMEN	*	*	*	*	.	*	*
426	DENTAL LABORATORY TECHNICIANS	*	*	*	*	.	.	.
431	ELECTRICIAN APPRENTICES	*	*	*	X	*	*	*
471	AIRCRAFT MECHANICS & REPAIRMEN	*	*	*	*	*	*	*
474	AUTOMOBILE MECHANICS APPRENTICES	*	*	*	*	*	.	X
481	HEAVY EQUIP. MECH., INCL. DIESEL	*	*	*	*	*	*	*
484	OFFICE MACHINE MECH. & REPAIRMEN	*	*	*	*	*	*	X
485	RADIO & TV MECHANICS & REPAIRMEN	*	*	*	*	*	*	X
504	MOLDER APPRENTICES	*	*	*	*	*	*	*
511	PAINTER APPRENTICES	*	.	*	*	.	*	*

JOB ATTRIBUTE:	ACADEMIC ABILITIES							MENTAL ACTIVITIES									
	VERBAL DT	LANG	REASONDT	INTEL	MATHDOT	NUM	MATHPAQ	DATA	DECIDE	REASONPQ	PLAN	COMBINE	ANALYZE	COMPILE	CODE	TRANSCRB	WRITE	PRECISE	DETAIL
GROUP 16 -- CONT.																			
514 PAT. & MODEL MAKERS, EXC. PAPER	*	*	*	*	*	*		*											
515 PHOTOENGRAVERS & LITHOGRAPHERS	*	.	*	*	.	*		*											
540 SHIPFITTERS	*	*	*	*	*	*		*											
543 SIGN PAINTERS & LETTERERS	*	*	*	*	*	*		*											
561 TOOL & DIE MAKERS	*	*	*	*	*	*		*											
571 SPECIFIED CRAFT APPRENTICES, NEC	*	*	*	*	*	*		*											
572 NOT SPECIFIED APPRENTICES	*	*	*	*	*	*		*											
613 DRESSMAKERS & SMSTRSS.,EX. FACT.	.	*	*	*	.	*		*											
GROUP 17	50	57	50	56	56	49		53											
376 STENOGRAPHERS	X	*	*	*	.	.		*											
411 BRICKMASONS & STONEMAS.,APPRENT.	*	*	*	*	*	*		*											
430 ELECTRICIANS	*	*	*	*	*	*		*											
615 DRY WALL INSTALLERS & LATHERS	*	*	*	*	*	*		*											
GROUP 18	46	42	45	30	48	29		58											
311 CLERICAL ASSIST., SOCIAL WELFARE	*	.	*	*	.	.		*											
924 LAY MIDWIVES	*	*	*	*	*	*		*											
935 BARBERS	*	*	*	*	*	*		X											
944 HAIRDRESSERS & COSMETOLOGISTS	*	.	*	*	.	.		*											
945 PERSONAL SERVICE APPRENTICES	*	*	*	*	*	.		*											
GROUP 19	78	87	96	90	81	77		95											
92 POLITICAL SCIENTISTS	X	X	X	X	X	*		X											
172 TOOL PROGRAMMERS, NUM. CONTROL	*	*	X	X	*	X		X											
181 AUTHORS	X	X	X	X	.	.		X											
GROUP 20	73	72	74	71	69	78		67											
32 LIBRARIANS	X	*	X	X	*	*		X											
213 CONSTR. INSPECT., PUBLIC ADMIN.	*	*	*	X	*	X		X											
215 INSPECT., EXC. CONSTR., PUB. AD.	X	*	*	X	*	*		X											

321	ESTIMATORS & INVESTIGATORS, NEC	*	*	*	*	*	*	*
GROUP 21		76	73	74	71	68	63	75
24	FARM MANAGEMENT ADVISORS	X	X	X	X	*	*	X
25	FORESTERS & CONSERVATIONISTS	X	*	*	X	*	*	X
74	DIETITIANS	X	X	X	X	*	*	X
90	RELIGIOUS WORKERS, NEC	X	*	*	X	*	*	X
100	SOCIAL WORKERS	X	X	X	X	*	*	X
101	RECREATION WORKERS	X	*	X	X	*	*	X
135	MISC. TEACHERS, COLLEGE	X	X	X	X	*	*	X
142	ELEMENTARY SCHOOL TEACHERS	X	X	X	X	*	*	X
193	RADIO & TELEVISION ANNOUNCERS	X	X	X	X	*	*	X
205	BUYERS, WHOLESALE & RETAIL TRADE	X	*	*	X	*	*	X
211	FUNERAL DIRECTORS	X	*	*	X	*	*	X
216	MANAGERS & SUPERS., BUILDING	*	*	*	X	*	*	X
220	OFFICE MANAGERS, NEC	X	*	*	X	*	*	X
223	OFFIC. OF LODGES, SOC., & UNIONS	X	X	X	X	*	*	X
224	POSTMASTERS & MAIL SUPERINTEND.	X	*	*	X	*	*	X
230	REST., CAFETERIA, & BAR MANAGERS	*	*	*	*	*	*	X
231	SALES MAN. & DEPT. HDS.,RET. TR.	X	*	*	X	*	*	X
233	SALES MANAGERS,EXC. RETAIL TRADE	X	*	*	X	*	*	X
260	ADVERTISING AGENTS & SALESMEN	X	*	*	X	*	*	*
261	AUCTIONEERS	X	*	*	*	.	.	X
281	SALES REP., MANUFACT. INDUSTRIES	X	*	*	*	*	*	X
282	SALES REP., WHOLESALE TRADE	*	*	*	*	*	*	*
285	SALESMEN OF SERV. & CONSTRUCTION	X	*	*	*	*	*	X
312	CLERICAL SUPERVISORS, NEC	*	*	*	X	*	*	X
326	INS. ADJUST.,EXAMIN.,& INVESTIG.	X	X	X	X	*	*	X
334	METER READERS, UTILITIES	*	*	*	*	.	*	*
391	TICKET, STATION, & EXPR. AGENTS	*	*	*	*	*	*	X
802	FARM MANAGERS	X	*	X	X	*	*	X
931	AIRLINE STEWARDESSES	*	*	*	*	*	*	*
964	POLICEMEN & DETECTIVES	*	*	*	*	*	*	X
GROUP 22		64	64	73	69	82	87	65
151	CHEMICAL TECHNICIANS	*	*	*	X	*	X	X
161	SURVEYORS	*	*	X	X	*	X	X
162	ENG. & SCIENCE TECHNICIANS, NEC	*	*	*	*	*	*	X
305	BOOKKEEPERS	*	*	*	*	*	X	*
GROUP 23		66	69	71	71	69	77	74
154	INDUSTRIAL ENG. TECHNICIANS	*	*	*	X	*	*	X
164	AIR TRAFFIC CONTROLLERS	*	*	*	X	*	*	X
173	TECH. EX. HEALTH,ENG.,& SCI.,NEC	*	*	*	*	*	*	*
182	DANCERS	X	X	X	X	*	*	X
191	PHOTOGRAPHERS	*	*	*	*	*	*	X
360	PAYROLL & TIMEKEEPING CLERKS	*	*	*	X	*	X	*

JOB ATTRIBUTE:	ACADEMIC ABILITIES							MENTAL ACTIVITIES								
	VERBAL DT	LANG	READ SOND T	INTEL	NA THDOT	NUM	MATH PAQ	DATA	DECIDE	REASONPQ	PLAN	COMBINE	ANALYZE	COMPILE	CODE	TRANSCRB	WRITE	PRECISE	DETAIL
GROUP 24	73	69	71	66	68	75		66											
26 HOME MANAGEMENT ADVISORS	X	X	X	X	*	*		X											
85 HEALTH TECHNOL. & TECHNIC., NEC	*	*	*	X	*	*		X											
123 ART, DRAMA, & MUSIC TEACHERS,COL	X	X	X	X	*	*		X											
141 ADULT EDUCATION TEACHERS,EXC.COL	X	*	*	X	*	*		X											
145 TEACHERS, EXC. COLLEGE, NEC	X	*	*	X	*	*		X											
221 OFFICERS, PILOTS, & PURSERS;SHIP	*	*	*	X	*	*		X											
310 CASHIERS	*	.	*	*	*	*		*											
382 TEACHER AIDES, EXC. SCHOOL MON.	X	*	*	*	*	*		*											
704 COND. & MTRMEN.,URB. RAIL TRANS.	*	.	*	*	.	*		*											
GROUP 25	62	59	61	62	73	75		59											
153 ELECTRIC. & ELECTRON. ENG. TECH.	*	*	*	X	*	*		X											
155 MECHANICAL ENG. TECHNICIANS	*	*	*	*	*	*		X											
165 EMBALMERS	*	*	*	X	*	*		*											
171 RADIO OPERATORS	*	*	*	X	*	*		X											
341 BOOKKEEPING & BILLING MACH. OPR.	*	*	*	*	*	*		*											
410 CARPENTER APPRENTICES	*	*	*	*	*	*		*											
420 CARPET INSTALLERS	*	.	*	*	.	*		*											
425 DECORATORS & WINDOW DRESSERS	*	*	*	X	*	*		X											
461 MACHINISTS	*	*	*	*	*	*		X											
462 MACHINIST APPRENTICES	*	*	*	*	*	*		X											
491 MECHANIC, EXC. AUTO, APPRENTICES	*	*	*	*	*	*		X											
523 PLUMBER & PIPE FITTER APPRENT.	*	*	*	*	*	*		*											
536 SHEETMETAL APPRENTICES	*	*	*	*	*	*		X											
551 TAILORS	*	*	*	*	*	*		X											
562 TOOL & DIE MAKER APPRENTICES	*	*	*	*	*	*		*											
GROUP 26	65	69	73	74	74	78		81											
183 DESIGNERS	*	*	*	X	*	*		X											
502 MILLWRIGHTS	*	*	*	X	*	*		X											
GROUP 27	76	72	71	74	55	58		59											
61 CHIROPRACTORS	X	X	X	X	*	*		X											

84	THERAPY ASSISTANTS	X	*	*	X	*	*	*
124	COACHES & PHYS. ED. TEACHERS,COL	X	*	*	X	.	.	X
143	PREKIND. & KINDERGARTEN TEACHERS	X	*	X	X	.	*	X
301	BANK TELLERS	*	*	*	X	*	X	*
370	SECRETARIES, LEGAL	X	*	*	X	.	*	*
371	SECRETARIES, MEDICAL	X	*	*	X	*	*	*
372	SECRETARIES, NEC	X	*	*	X	*	*	X
GROUP 28		95	95	95	94	95	95	94
3	COMPUTER PROGRAMMERS	X	X	X	X	X	X	X
5	COMPUTER SPECIALISTS, N.E.C.	X	X	X	X	X	X	X
34	ACTUARIES	X	X	X	X	X	X	X
35	MATHEMATICIANS	X	X	X	X	X	X	X
36	STATISTICIANS	X	X	X	X	X	X	X
43	ATMOSPHERIC & SPACE SCIENTISTS	X	X	X	X	X	X	X
94	SOCIOLOGISTS	X	X	X	X	X	*	X
96	SOCIAL SCIENTISTS, NEC	X	X	X	X	*	*	X
GROUP 29		91	87	89	89	91	93	84
1	ACCOUNTANTS	X	X	X	X	X	X	X
55	OPERAT. & SYST. RESEARC. & ANAL.	X	X	X	X	*	*	X
91	ECONOMISTS	X	X	X	X	X	X	X
GROUP 30		91	86	90	90	87	87	81
4	COMPUTER SYSTEMS ANALYSTS	X	X	X	X	X	X	X
30	JUDGES	X	X	X	X	*	X	X
31	LAWYERS	X	X	X	X	*	X	X
56	PERSONNEL & LABOR REL. WORKERS	X	*	X	X	*	*	X
82	HEALTH REC. TECHNOL. & TECHNIC.	X	X	X	X	X	*	X
86	CLERGYMEN	X	X	X	X	*	*	X
93	PSYCHOLOGISTS	X	X	X	X	X	X	X
102	AGRICULTURE TEACHERS, COLLEGE	X	X	X	X	X	X	X
140	TEACHERS, COL., SUBJ. NOT SPEC.	X	X	X	X	*	*	X
174	VOCATIONAL AND EDUCAT COUNSELORS	X	X	X	X	*	*	X
184	EDITORS & REPORTERS	X	X	X	X	*	*	X
192	PUB. REL. MEN & PUBLICITY WRITER	X	X	X	X	*	X	X
195	RESEARCH WORKERS, NOT SPECIFIED	X	X	X	X	*	*	X
201	ASS.,CON.,& TREAS.,LOC. PUB. AD.	X	X	X	X	X	X	X
202	BANK OFFICERS & FINANC. MANAGERS	X	*	X	X	X	X	X
203	BUYERS & SHIPPERS, FARM PRODUCTS	X	*	X	X	*	*	X
210	CREDIT MEN	X	X	X	X	X	X	X
212	HEALTH ADMINISTRATORS	X	X	X	X	*	X	X
222	OFFICIALS & ADM., PUB. ADM., NEC	X	X	X	X	*	*	X
225	PURCHASING AGENTS & BUYERS, NEC	X	*	*	X	*	X	X
235	SCHOOL ADMINISTRATORS, COLLEGE	X	X	X	X	*	X	X
240	SCHOOL ADMINISTRAT.,ELEM. & SEC.	X	X	X	X	*	*	X
245	MANAGERS AND ADMINISTRATORS, NEC	X	*	X	X	*	*	X
265	INS. AGENTS,BROKERS,& UNDERWRIT.	X	X	X	X	*	*	X
270	REAL ESTATE AGENTS & BROKERS	X	*	*	X	*	*	X

JOB ATTRIBUTE:	ACADEMIC ABILITIES							MENTAL ACTIVITIES									
	VERBALDT	LANG	READSONDT	INTEL	MATHDOT	NUM	MATHPAQ	DATA	DECIDE	REASONPQ	PLAN	COMBINE	ANALYZE	COMPILE	CODE	TRANSCRB	WRITE	PRECISE	DETAIL
GROUP 30 -- CONT.																			
271 STOCK & BOND SALESMEN	X	X	X	X	X	X		X											
363 REAL ESTATE APPRAISERS	X	*	X	X	*	X		X											
GROUP 31	91	85	92	90	95	94		92											
6 AERONAUT. & ASTRONAUT. ENGINEERS	X	X	X	X	X	X		X											
10 CHEMICAL ENGINEERS	X	X	X	X	X	X		X											
11 CIVIL ENGINEERS	X	X	X	X	X	X		X											
155 MATHEMATICAL TECHNICIANS	X	*	X	X	X	X		X											
GROUP 32	92	94	93	92	95	94		92											
2 ARCHITECTS	X	X	X	X	X	X		X											
12 ELECTRICAL & ELECTRONIC ENGINRS.	X	X	X	X	X	X		X											
13 INDUSTRIAL ENGINEERS	X	X	X	X	X	X		X											
14 MECHANICAL ENGINEERS	X	X	X	X	X	X		X											
20 MINING ENGINEERS	X	X	X	X	X	X		X											
21 PETROLEUM ENGINEERS	X	X	X	X	X	X		X											
23 ENGINEERS, NEC	X	X	X	X	X	X		X											
33 ARCHIVISTS AND CURATORS	X	X	X	X	*	*		X											
45 CHEMISTS	X	X	X	X	X	X		X											
51 GEOLOGISTS	X	X	X	X	X	X		X											
53 PHYSICISTS AND ASTRONOMERS	X	X	X	X	X	X		X											
95 URBAN & REGIONAL PLANNERS	X	X	X	X	*	X		X											
GROUP 33	89	86	82	88	87	84		80											
22 SALES ENGINEERS	X	X	X	X	X	X		X											
75 REGISTERED NURSES	X	X	X	X	*	X		X											
76 THERAPISTS	X	X	X	X	*	*		X											
113 HEALTH SPECIALITIES TEACHERS,COL	X	X	X	X	*	X		X											
144 SECONDARY SCHOOL TEACHERS	X	X	X	X	*	*		X											
GROUP 34	92	95	94	94	95	94		91											

15	METALLURG. & MATERIALS ENGINRS.	X	X	X	X	X	X	X
42	AGRICULTURAL SCIENTISTS	X	X	X	X	X	X	X
44	BIOLOGICAL SCIENTISTS	X	X	X	X	X	X	X
52	MARINE SCIENTISTS	X	X	X	X	X	X	X
54	LIFE & PHYSICAL SCIENTISTS, NEC	X	X	X	X	X	X	X
64	PHARMACISTS	X	X	X	X	X	X	X
72	VETERINARIANS	X	X	X	X	*	X	X
80	CLIN. LAB. TECHNOLOG. & TECHNIC.	X	X	X	X	*	X	X
152	DRAFTSMEN	*	*	X	X	*	X	X
GROUP 35		91	93	89	92	83	83	91
73	HEALTH PRACTITIONERS, NEC	X	X	X	X	*	*	X
163	AIRPLANE PILOTS	X	*	X	X	*	X	X
185	MUSICIANS & COMPOSERS	X	X	X	X	*	*	X
GROUP 36		88	88	92	92	89	94	76
62	DENTISTS	X	X	X	X	X	X	X
63	OPTOMETRISTS	X	X	X	X	X	X	X
65	PHYSICIANS, MEDICAL & OSTEOPATH.	X	X	X	X	X	X	X
81	DENTAL HYGIENISTS	X	*	*	X	*	X	*
83	RADIOLOGIC TECHNOLOG. & TECHNIC.	*	X	X	X	*	X	X
OCCUPATIONS THAT WERE NOT GROUPED BECAUSE OF LACK OF DATA TO DO SO								
103	ATMO.EARTH.MAR.& SPACE TEACH.COL	-	-	-	-	-	-	-
104	BIOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-
105	CHEMISTRY TEACHERS, COLLEGE	-	-	-	-	-	-	-
110	PHYSICS TEACHERS, COLLEGE	-	-	-	-	-	-	-
111	ENGINEERING TEACHERS, COLLEGE	-	-	-	-	-	-	-
112	MATHEMATICS TEACHERS, COLLEGE	-	-	-	-	-	-	-
114	PSYCHOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-
115	BUSINESS & COMMERCE TEACHERS,COL	-	-	-	-	-	-	-
116	ECONOMICS TEACHERS, COLLEGE	-	-	-	-	-	-	-
120	HISTORY TEACHERS, COLLEGE	-	-	-	-	-	-	-
121	SOCIOLOGY TEACHERS, TEACHERS	-	-	-	-	-	-	-
122	SOCIAL SCIENCE TEACHERS, MEC.COL	-	-	-	-	-	-	-
125	EDUCATION TEACHERS, COLLEGE	-	-	-	-	-	-	-
126	ENGLISH TEACHERS, COLLEGE	-	-	-	-	-	-	-
130	FOREIGN LANGUAGE TEACHERS,COL	-	-	-	-	-	-	-
131	HOME ECONOMICS TEACHERS, COL	-	-	-	-	-	-	-
132	LAW TEACHERS, COLLEGE	-	-	-	-	-	-	-
133	THEOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-
134	TRADE,IND., & TECH. TEACHERS,COL	-	-	-	-	-	-	-
170	FLIGHT ENGINEERS	-	-	-	-	-	-	-
383	TELEGRAPH MESSENGERS	-	-	-	-	-	-	-
475	DATA PROCESSING MACH. REPAIRMEN	-	-	-	-	-	-	-
512	PAPERHANGERS	-	-	-	-	-	-	-
605	CHAINMEN,RODMEN,& AXMEN;SURVEY.	-	-	-	-	-	-	-
634	MEAT WRAPPERS, RETAIL TRADE	-	-	-	-	-	-	-
770	WAREHOUSEMEN, NEC	-	-	-	-	-	-	-

JOB ATTRIBUTE:	ACADEMIC ABILITIES							MENTAL ACTIVITIES									
	VERBALDT	LANG	READSONDT	INTELL	MATHDOT	NUM	MATHPAQ	DATA	DECIDE	REASONPQ	PLAN	COMBINE	ANALYZE	COMPILE	CODE	TRANSCRB	WRITE	PRECISE	DETAIL
OCCUPATIONS NOT GROUPED -- CONT.																			
923 FARM LABORERS,UNPAID FAM. WORKER	-	-	-	-	-	-		-											
923 HEALTH TRAINEES	-	-	-	-	-	-		-											
952 SCHOOL MONITORS	-	-	-	-	-	-		-											
954 WELFARE SERVICE AIDES	-	-	-	-	-	-		-											
953 MARSHALS & CONSTABLES	-	-	-	-	-	-		-											

Appendix D

Psychomotor Abilities and Motor Activities of Different Occupations

Key

Numbers next to the group numbers are percentiles for the group average on the variable in question.

· A low score

* A moderate score

X A high score

- Data are not available

Note

Data for the PAQ variables have been omitted pending permission from PAQ Services to release these data (per our agreement in purchasing their proprietary data).

JOB ATTRIBUTE:	PSYCHOMOTOR ABILITIES							MOTOR ACTIVITIES							
	FINGER DEXTERITY	MANUAL DEXTERITY	MOTOR COORDINATION	FORM PERCEPTION	COLOR DISCRIMINATION	THINGS	SPATIAL	DIMENSION 10	DIMENSION 16	DIMENSION 15	DIMENSION 13	DIMENSION 12	DIMENSION 19	DIMENSION 11	DIMENSION 14
CORRELATION WITH: ACADEMIC ABILITIES	.13	-.30	-.12	.40	.20	-.05	.41	-.42	.18	-.26	-.17	.55	-.44	-.04	.10
MOTOR ABILITIES	.80	.79	.82	.52	.43	.74	.42	.20	.13	.02	.40	.05	.33	-.14	-.18
DEALING WITH PEOPLE	-.20	-.40	-.29	-.17	-.05	-.47	-.20	-.20	.18	-.02	-.33	.21	-.45	.10	.12
GROUP 1	26	40	21	14	41	25	21								
526 HEATERS, METAL	.	*	.	*	.	*	.								
753 FREIGHT & MATERIAL HANDLERS	.	*	.	.	.	.	.								
760 LONGSHOREMEN & STEVEDORES	.	*	.	.	.	.	*								
762 STOCK HANDLERS	.	*	.	*	.	.	.								
901 CHMBRMDS. & MDS.,EXC. PRI. HSHD.	.	*	.	.	.	.	.								
902 CLEANERS & CHARWOMEN	.	*	*	.	.	.	.								
913 DISHWASHERS	*	*	.	.	.	.	.								
GROUP 2	2	29	26	17	52	38	27								
983 LAUNDRESSES, PRIVATE HOUSEHOLD	.	*	*	.	.	.	.								
443 FURNITURE & WOOD FINISHERS	.	*	*	*	.	*	.								
704 DELIVERYMEN & ROUTEMEN	.	*	*	.	.	*	.								
953 USHERS,RECREATION & AMUSEMENT	.	.	.	.	.	.	.								
960 CROSSING GUARDS & BRIDGE TENDERS	.	*	*	*	.	*	*								
984 MAIDS & SERVANTS,PRIV. HOUSEHOLD	.	*	.	.	.	.	.								
GROUP 3	23	34	19	11	32	32	5								
711 PARKING ATTENDANTS	.	*	.	.	.	*	.								
911 BUSBOYS	.	*	.	.	.	.	.								
933 ATTENDANTS, PERSONAL SERVICE,NEC	.	*	.	.	.	.	.								
934 BAGGAGE PORTERS & BELLHOPS	.	*	.	.	.	.	.								
941 BOOTBLACKS	.	*	.	.	.	.	.								
943 ELEVATOR OPERATORS	.	*	*	.	.	*	*								
960 CHILD CARE WORKERS,PRI. HOUSEHD.	.	*	.	.	.	.	.								
GROUP 4	47	56	52	39	43	51	40								
344 DUPLICATING MACHINE OPERATORS	*	*	*	*	.	*	*								
355 OFFICE MACHINE OPERATORS, NEC	*	*	*	*	.	*	.								

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392	WEIGHERS	•	*	*	•	•	•	•
401	AUTOMOBILE ACCESSORIES INSTALLER	*	*	*	*	•	*	*
402	BAKERS	*	*	*	*	•	X	*
403	BLACKSMITHS	*	*	*	*	•	X	*
405	BOOKBINDERS	*	*	*	*	•	*	*
412	BULLDOZER OPERATORS	•	*	*	•	•	*	*
421	CEMENT & CONCRETE FINISHERS	*	*	*	*	•	X	*
424	CRANEMEN, DERRICKMEN, & HOISTMEN	•	*	*	•	•	*	*
435	ENGRAVERS, EXC. PHOTOENGRAVERS	*	*	*	*	•	X	*
436	EXCAV,GRAD,& RD MACH OP; EX BOZR	•	*	*	*	•	*	*
442	FORGEMEN & HAMMERMEN	•	*	*	*	•	*	*
445	GLAZIERS	*	*	*	*	•	*	*
446	HT. TREATERS,ANNEAL.,& TEMPERERS	•	*	*	*	•	*	*
450	INSP.,SCALERS,& GRAD.;LOG & LUM.	•	*	*	*	•	•	*
455	LOCOMOTIVE ENGINEERS	•	*	*	*	•	*	*
483	LOOM FIXERS	*	*	*	X	•	X	*
495	NOT SPEC. MECHANICS & REPAIRMEN	*	*	*	*	•	*	*
501	MILLERS; GRAIN, FLOUR, & FEED	•	*	•	•	•	*	•
503	MOLDERS, METAL	*	*	*	*	•	*	*
530	PRSSMN. & PLATE PRNTRS.,PRINTING	*	*	*	*	•	*	*
533	ROLLERS & FINISHERS, METAL	*	*	*	*	•	*	*
546	STONE CUTTERS & STONE CARVERS	*	*	*	*	•	*	*
560	TILE SETTERS	*	*	*	*	•	X	*
563	UPHOLSTERERS	*	*	*	*	•	*	*
601	ASBESTOS & INSULATION WORKERS	*	*	*	*	•	*	*
602	ASSEMBLERS	*	*	*	*	•	*	*
603	BLASTERS & POWDERMEN	*	*	*	*	•	*	*
604	BOTTLING & CANNING OPERATIVES	*	*	*	•	•	•	•
610	CHECKERS,EXAM.,& INSPECT.;MANUF.	*	*	*	*	•	•	*
611	CLOTHING IRONERS & PRESSERS	•	*	*	*	•	*	•
612	CUTTING OPERATIVES, NEC	*	*	*	*	•	*	•
620	DYERS	•	*	•	*	*	*	•
621	FILERS,POLISH.,SANDERS,& BUFFERS	*	*	*	*	•	*	*
622	FURNACEMEN,SMELTERMEN,& POURERS	•	*	*	*	•	*	*
624	GRADERS & SORTERS, MANUFACTURING	•	*	*	*	•	•	•
625	PROD GRAD & PACK,EXC FACT & FARM	•	*	•	*	•	•	•
630	LAUN. & DRY CLEAN. OPERATIV.,NEC	•	*	•	*	•	•	•
633	MEAT CUTTERS & BUTCHERS,MANUF.	*	*	*	•	•	•	•
636	MILLINERS	*	*	*	*	*	*	*
640	MINE OPERATIVES,NEC	•	*	*	*	•	*	*
641	MIXING OPERATIVES	•	*	*	•	•	*	•
642	OILERS & GREASERS, EXC. AUTO	*	*	*	*	•	•	•
643	PACKERS & WRAP.,EX. MEAT & PROD.	*	*	•	•	•	•	•
644	PAINTERS, MANUFACTURED ARTICLES	*	*	*	*	•	*	•
650	DRILL PRESS OPERATIVES	*	*	*	*	•	*	*
651	GRINDING MACHINE OPERATIVES	*	*	*	*	•	*	*
652	LATHE & MILLING MACH. OPERATIVES	*	*	*	*	•	*	*
653	PRECISION MACH. OPERATIVES, NEC	*	*	*	*	•	*	*
655	PUNCH & STAMP. PRESS OPERATIVES	*	*	*	*	•	*	*
660	RIVETERS & FASTENERS	*	*	*	*	•	*	*
662	SAWYERS	•	*	*	*	•	*	*
664	SHOEMAKING MACHINE OPERATIVES	•	*	*	*	•	•	•
665	SOLDERERS	*	*	*	*	•	*	•
666	STATIONARY FIREMEN	•	*	*	•	•	*	•
670	CARDING,LAPPING, & COMBING OPER.	•	*	*	*	•	*	•

JOB ATTRIBUTES:	PSYCHOMOTOR ABILITIES							MOTOR ACTIVITIES								
	FINGER DEX	MANUAL DEX	MOTOR COOR	FORM PER	COLOR DIS	THINGS	SPATIAL	DIM 10	DIM 16	DIM 15	DIM 13	DIM 12	DIM 9	DIM 11	DIM 14
GROUP 4 -- CONT.															
572 SPINNERS,TWISTERS,& WINDERS	*	*	*	*	.	*	.								
573 WEAVERS	*	*	*	*	.	*	*								
574 TEXTILE OPERATIVES,NEC	*	*	*	*	.	*	.								
580 WELDERS & FLAME-CUTTERS	*	*	*	*	.	*	*								
581 WINDING OPERATIVES, NEC	*	*	*	*	.	*	.								
582 MACHINE OPERATIVES, MISC. SPEC.	.	*	*	*	.	*	.								
592 MACHINE OPERATIVES,NOT SPECIFIED	*	*	*	*	.	*	.								
694 MISCELLANEOUS OPERATIVES	*	*	*	*	.	.	.								
695 NOT SPECIFIED OPERATIVES	*	*	*	*	.	.	.								
706 FORK LIFT & TOW MOTOR OPERATIVES	.	*	*	.	.	*	*								
710 MTRMEN.;MINE,FACT.,LOG. CAMP,ETC	.	*	*	*	.	*	*								
713 RAILROAD SWITCHMEN	.	*	*	*	.	*	*								
715 TRUCK DRIVERS	.	*	*	.	.	*	*								
750 CARPENTERS' HELPERS	.	*	*	.	.	*	.								
751 CONSTR. LABORERS,EX. CARP. HELP.	*	*	*	*	.	*	*								
752 FISHERMEN & OYSTERMEN	*	*	*	*	.	*	*								
755 GARDENERS & GRNDSKPRS.,EXC.FARM	.	*	*	.	.	*	*								
761 LUMBERMEN,RAFTSMEN,& WOODCHOP.	.	*	*	.	.	.	*								
763 TEAMSTERS	.	*	*	.	.	.	*								
764 VEHICLE WASHERS & EQ. CLEANERS	.	*	*	.	.	.	.								
780 MISC. LABORERS	.	*	.	.	.	.	.								
785 NOT SPECIFIED LABORERS	*	*	*	.	.	.	.								
822 FARM LABORERS, WAGE WORKERS	*	*	*	.	.	.	.								
903 JANITORS & SEXTONS	.	*	*	.	.	.	.								
GROUP 5	38	55	47	27	42	40	39								
333 MESSENGERS & OFFICE BOYS	*	*	*	.	.	.	.								
623 GARAGE WORKERS & GAS STAT. ATT.	.	*	.	.	.	.	.								
701 BOATMEN & CANALMEN	.	*	*	*	.	*	*								
712 RAILROAD BRAKEMEN	.	*	*	*	.	*	*								
714 TAXICAB DRIVERS & CHAUFFEURS	.	*	*	.	.	*	*								
740 ANIMAL CARETAKERS, EXC. FARM	*	*	*	*	.	*	*								
754 GARBAGE COLLECTORS	.	*	*	.	.	*	*								
916 ED SERV WORKERS,NEC EX PRI HSHD	*	*	.	.	.	.	.								
GROUP 6	45	46	47	29	56	35	26								

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914	FOOD COUNTER & FOUNTAIN WORKERS	*	*	*	.	.	.	.
942	CHILD CARE WORKERS,EX. PR. HSHD.	*	*	*	*	.	.	*
GROUP 7		75	87	94	59	62	57	58
361	POSTAL CLERKS	.	*	X	.	.	.	*
444	FURRIERS	*	*	*	*	*	*	*
453	JEWELERS & WATCHMAKERS	*	*	*	X	.	X	*
542	SHOE REPAIRMEN	*	X	*	*	.	*	*
631	MEAT CUTTERS & BUTCHERS,EXC MAN.	*	X	*	*	.	*	*
663	SEWERS & STITCHERS	X	*	*	*	.	*	*
671	KNITTERS,LOOPERS,& TOPPERS	*	*	*	*	.	*	*
GROUP 8 -- NO OCCUPATIONS IN THIS GROUP								
GROUP 9 -- NO OCCUPATIONS IN THIS GROUP								
GROUP 10		44	17	30	54	20	28	41
362	PROOFREADERS	*	.	*	*	.	.	*
GROUP 11		29	26	19	27	39	28	6
348	EXPEDITERS & PRODUCTION CONTROL.	.	.	.	*	.	.	.
350	LIBRARY ATTENDANTS & ASSISTANTS	.	.	.	*	.	.	.
352	MAIL HANDLERS,EXCEPT POST OFFICE	.	.	.	*	.	.	.
381	STOCK CLERKS & STOREKEEPERS	.	*	.	*	.	.	.
395	NOT SPECIFIED CLERICAL WORKERS	.	.	.	.	.	.	.
910	BARTENDERS	.	*	.	.	.	.	.
981	COOKS, PRIVATE HOUSEHOLD	.	*	.	*	.	*	.
GROUP 12		29	21	25	21	32	22	22
175	ACTORS	.	.	*	*	.	.	*
226	RAILROAD CONDUCTORS	.	*	*	*	.	.	*
264	HUCKSTERS & PEDDLERS	.	*	.	.	.	.	.
266	NEWSBOYS	.	.	.	.	.	.	.
313	COLLECTORS, BILL & ACCOUNT	.	.	*	.	.	.	.
314	COUNTER CLERKS, EXCEPT FOOD	.	.	.	.	.	.	.
315	DISPATCHERS & STARTERS, VEHICLE	.	.	.	.	.	.	.
320	ENUMERATORS & INTERVIEWERS	*	*	*	*	.	.	.
364	RECEPTIONISTS	*	.	.	.	.	.	.
932	ATTENDANTS, RECREAT. & AMUSEMENT	.	*	*	.	.	.	.
940	BOARDING & LODGING HOUSE KEEPERS	.	*	*	*	.	.	.
950	HOUSEKEEPERS,EXC. PRIV. HSEHLD.	.	.	.	*	.	.	*
962	GUARDS & WATCHMEN	.	*	*	*	.	.	.
965	SHERIFFS & BAILIFFS	.	*	*	*	.	.	.
982	HOUSEKEEPERS, PRIVATE HOUSEHOLD	.	*	.	*	.	.	.

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JOB ATTRIBUTE:	PSYCHOMOTOR ABILITIES							MOTOR ACTIVITIES							
	FINGER DEXTERITY	MANUAL DEXTERITY	MOTOR COORDINATION	FORM PERCEPTION	COLOR DISCRIMINATION	THINGS	SPATIAL	DIM 10	DIM 16	DIM 15	DIM 13	DIM 12	DIM 9	DIM 11	DIM 14
GROUP 13	61	56	61	56	56	70	56								
150 AGRIC. & BIO. TECH., EXC. HEALTH	*	*	*	*	.	X	*								
303 BILLING CLERKS	*	*	*	.	.	*	.								
342 CALCULATING MACHINE OPERATORS	*	.	*	*	.	*	.								
343 COMPUTER & PERIPH. EQUIP. OPER.	*	*	*	*	.	*	*								
345 KEY PUNCH OPERATORS	*	.	X	*	.	X	*								
350 TABULATING MACHINE OPERATORS	*	*	*	*	.	*	*								
374 SHIPPING & RECEIVING CLERKS	.	*	*	*	.	.	.								
375 STATISTICAL CLERKS	*	.	*	*	.	*	.								
410 BRICKMASONS & STONEMASONS	*	*	*	*	.	X	*								
415 CARPENTERS	*	*	*	*	.	X	*								
422 COMPOSITORS & TYPESETTERS	*	*	*	*	.	X	*								
440 FLOOR LAYERS, EXC. TILE SETTERS	*	*	*	*	.	*	*								
452 INSPECTORS, NEC	.	*	.	*	.	*	*								
454 JOB & DIE SETTERS, METAL	*	*	*	*	.	X	*								
456 LOCOMOTIVE FIREMEN	.	*	*	*	.	.	*								
470 AIR CON., HT., & REF. MECH. & REP.	*	*	*	*	.	X	*								
472 AUTOMOBILE BODY REPAIRMEN	*	*	*	X	.	*	*								
473 AUTOMOBILE MECHANICS	*	*	*	*	.	X	*								
480 FARM IMPLEMENT MECH. & REPAIRMEN	*	*	*	*	.	X	*								
482 HSEHLD APPL. & ACC. INST. & MECH	*	*	*	*	.	X	*								
486 RLRD. & CAR SHOP MECH. & REPRMN.	*	*	*	*	.	X	*								
492 MISC. MECHANICS & REPAIRMEN	*	*	*	*	.	X	*								
506 OPTIC., & LENS GRIND. & POLISH.	*	*	*	*	.	*	*								
510 PAINTERS,CONSTRUCTION & MAINTEN.	*	*	*	*	*	X	*								
516 PIANO & ORGAN TUNERS & REPAIRMEN	*	*	*	*	.	X	*								
520 PLASTERERS	*	*	*	*	.	X	*								
521 PLASTERER APPRENTICES	*	*	.	*	*	X	.								
531 PRESSMAN APPRENTICES	*	*	*	X	*	X	*								
535 SHEETMETAL WORKERS & TINSMITHS	*	*	*	*	.	X	*								
545 STATIONARY ENGINEERS	.	*	*	*	.	*	*								
550 STRUCTURAL METAL CRAFTSMEN	*	*	*	*	.	X	*								
575 CRAFTSMEN & KINDRED WORKERS, NEC	*	*	*	*	.	*	*								
614 DRILLERS, EARTH	.	*	*	*	.	X	*								
635 METAL PLATERS	*	*	*	*	.	*	*								
645 PHOTOGRAPHIC PROCESS WORKERS	*	*	*	*	*	*	*								
901 FARMERS(OWNERS & TENANTS)	.	*	*	*	.	X	*								

GROUP 14		60	50	49	54	65	57	55
180	ATHLETES & KINDRED WORKERS	*	*	*	*	.	.	*
325	FILE CLERKS	*	*	*	*	.	*	.
331	MAIL CARRIERS, POST OFFICE	.	*	*	.	.	.	.
394	MISCELLANEOUS CLERICAL WORKERS	*	.	*	*	.	.	.
404	BOILERMAKERS	*	*	*	*	.	X	*
433	ELECT. POWER LINEMEN & CABLEMEN	*	*	*	*	.	X	*
434	ELECTROTYPERS & STEREOTYPERS	*	*	*	X	.	*	*
505	MOTION PICTURE PROJECTIONISTS	*	*	*	*	*	*	*
522	PLUMBERS & PIPE FITTERS	*	*	*	*	.	X	*
525	POWER STATION OPERATORS	.	*	*	*	.	*	*
534	ROOFERS & SLATERS	*	*	*	*	.	X	*
552	TELEPHONE INSTALLERS & REPAIRMEN	*	*	*	*	.	X	*
554	TELEPHONE LINEMEN & SPLICERS	*	*	*	*	.	X	*
561	SAILORS & DECKHANDS	.	*	*	*	.	*	*
324	FARM SERVICE LABORERS,SELF-EMPL.	*	*	*	*	.	.	*
912	COOKS, EXC. PRIV. HOUSEHOLD	*	*	*	*	.	X	.
921	DENTAL ASSISTANTS	*	*	.	*	*	*	*
922	HEALTH AIDES, EXC. NURSING	*	*	*	*	.	.	*
961	FIREMEN, FIRE PROTECTION	.	*	*	*	*	.	X
GROUP 15		56	43	53	33	55	44	39
71	PODIATRISTS	*	*	*	*	.	*	*
194	WRITERS,ARTISTS,& ENTERTAIN.,NEC	*	*	*	*	.	.	*
262	DEMONSTRATORS	*	*	*	.	.	*	*
283	SALES CLERKS, RETAIL TRADE	*	*	*	*	.	.	*
294	SALESMEN, RETAIL TRADE	.	*	*	*	.	.	*
384	TELEGRAPH OPERATORS	*	*	*	*	.	*	.
385	TELEPHONE OPERATORS	*	*	*	.	.	*	.
441	FOREMEN, NEC	*	*	*	*	.	*	*
703	BUS DRIVERS	.	*	*	.	.	*	*
921	FARM FOREMEN	*	*	*	*	.	*	*
915	WAITERS	.	*	*	.	.	.	.
925	NURS. AIDES,ORDERLIES,& ATTEND.	*	*	*	.	.	.	.
926	PRACTICAL NURSES	*	*	*	*	.	.	*
GROUP 16		89	91	93	82	79	87	80
190	PAINTERS & SCULPTORS	X	X	X	X	X	X	X
391	TYPISTS	X	*	X	*	.	X	*
413	CABINETMAKERS	*	*	*	*	.	X	*
423	PRINT. TRADES APPR.,EX. PRESSMEN	*	*	*	X	.	X	*
425	DENTAL LABORATORY TECHNICIANS	*	*	*	*	*	*	*
431	ELECTRICIAN APPRENTICES	*	X	*	X	.	X	X
471	AIRCRAFT MECHANICS & REPAIRMEN	*	X	*	*	.	X	X
474	AUTOMOBILE MECHANICS APPRENTICES	*	X	*	*	.	X	X
481	HEAVY EQUIP. MECH., INCL. DIESEL	*	X	*	*	.	X	*
484	OFFICE MACHINE MECH. & REPAIRMEN	*	X	*	X	.	X	*
485	RADIO & TV MECHANICS & REPAIRMEN	*	X	*	X	*	X	*
504	MOLDER APPRENTICES	*	*	*	*	.	X	*
511	PAINTER APPRENTICES	*	X	*	*	X	X	*

JOB ATTRIBUTE:	PSYCHOMOTOR ABILITIES							MOTOR ACTIVITIES							
	FINGER DEX	MANUAL DEX	MOTOR COORD	FORM PERCEP	COLOR DISCRIM	THINGS	SPATIAL	DIM 10	DIM 06	DIM 55	DIM 13	DIM 12	DIM 9	DIM 11	DIM 14
GROUP 16 -- CONT.															
514 PAT. & MODEL MAKERS, EXC. PAPER	*	X	*	X	.	X	X								
515 PHOTOENGRAVERS & LITHOGRAPHERS	*	*	*	X	*	X	*								
540 SHIPFITTERS	*	X	X	*	.	X	X								
543 SIGN PAINTERS & LETTERERS	X	X	*	X	*	X	*								
561 TOOL & DIE MAKERS	*	X	*	X	.	X	X								
571 SPECIFIED CRAFT APPRENTICES, NEC	*	X	*	*	.	X	X								
572 NOT SPECIFIED APPRENTICES	*	*	*	X	.	X	X								
613 DRESSMAKERS & SMSTRSS.,EX. FACT.	*	*	*	*	.	X	*								
GROUP 17	89	85	94	77	56	85	57								
376 STENOGRAPHERS	X	*	X	X	.	X	.								
411 BRICKMASONS & STONEMAS.,APPRENT.	*	*	*	*	.	X	*								
430 ELECTRICIANS	*	X	*	X	.	X	X								
615 DRY WALL INSTALLERS & LATHERS	*	*	*	*	.	X	*								
GROUP 18	88	63	94	81	69	52	56								
311 CLERICAL ASSIST., SOCIAL WELFARE	*	*	*	*	.	.	.								
924 LAY MIDWIVES	*	*	*	*	.	.	*								
935 BARBERS	*	*	*	X	.	*	*								
944 HAIRDRESSERS & COSMETOLOGISTS	*	*	*	X	*	X	*								
945 PERSONAL SERVICE APPRENTICES	*	*	X	X	*	X	*								
GROUP 19	23	2	2	45	0	0	49								
92 POLITICAL SCIENTISTS	.	.	.	.	.	.	.								
172 TOOL PROGRAMMERS, NUM. CONTROL	.	.	.	X	.	.	X								
181 AUTHORS	.	.	.	.	.	.	.								
GROUP 20	31	21	23	54	60	20	59								
32 LIBRARIANS	.	.	.	*	.	.	.								
213 CONSTR. INSPECT., PUBLIC ADMIN.	.	.	.	*	.	.	X								
215 INSPECT., EXC. CONSTR., PUB. AD.	.	*	.	*	.	.	*								

321	ESTIMATORS & INVESTIGATORS, NEC	.	.	*	*	.	.	*
GROUP 21		24	16	19	39	52	20	39
24	FARM MANAGEMENT ADVISORS	.	.	.	*	*	.	.
25	FORESTERS & CONSERVATIONISTS	.	*	.	*	.	.	*
74	DIETITIANS	.	.	.	*	.	.	*
90	RELIGIOUS WORKERS, NEC	.	.	.	*	.	.	*
100	SOCIAL WORKERS	.	.	.	.	.	.	.
101	RECREATION WORKERS	*	*	*	*	.	.	*
135	MISC. TEACHERS, COLLEGE	.	.	.	X	.	.	X
142	ELEMENTARY SCHOOL TEACHERS	*	.	*	*	.	.	.
193	RADIO & TELEVISION ANNOUNCERS	.	.	.	.	.	.	.
205	BUYERS, WHOLESALE & RETAIL TRADE	.	.	.	*	*	.	*
211	FUNERAL DIRECTORS	.	.	.	*	.	.	*
216	MANAGERS & SUPERS., BUILDING	.	.	.	*	.	.	*
220	OFFICE MANAGERS, NEC	.	.	.	.	.	.	.
223	OFFIC. OF LODGES, SOC., & UNIONS	.	.	.	.	.	.	.
224	POSTMASTERS & MAIL SUPERINTEND.	.	.	.	*	.	.	.
230	REST., CAFETERIA, & BAR MANAGERS	.	.	.	*	.	.	.
231	SALES MAN. & DEPT. HDS.,RET. TR.	.	.	.	*	.	.	.
233	SALES MANAGERS,EXC. RETAIL TRADE	.	.	.	*	.	.	*
260	ADVERTISING AGENTS & SALESMEN	.	.	.	*	.	.	*
261	AUCTIONEERS	.	.	.	*	.	.	.
281	SALES REP., MANUFACT. INDUSTRIES	.	*	*	*	.	.	*
282	SALES REP., WHOLESALE TRADE	.	.	.	*	.	.	*
285	SALESMEN OF SERV. & CONSTRUCTION	.	.	.	*	.	.	*
312	CLERICAL SUPERVISORS, NEC	*	.	.	.	.	.	.
345	INS. ADJUST.,EXAMIN.,& INVESTIG.	.	.	.	*	.	.	*
354	METER READERS, UTILITIES	.	.	.	*	.	.	*
393	TICKET, STATION, & EXPR. AGENTS	.	.	.	.	.	.	.
302	FARM MANAGERS	.	.	.	*	.	.	*
931	AIRLINE STEWARDESSES	.	*	*	.	.	.	.
964	POLICEMEN & DETECTIVES	.	.	*	*	.	.	*
GROUP 22		75	53	68	82	79	62	64
151	CHEMICAL TECHNICIANS	*	*	*	X	*	X	*
161	SURVEYORS	*	*	*	X	.	.	X
162	ENG. & SCIENCE TECHNICIANS, NEC	*	*	*	X	.	X	*
305	BOOKKEEPERS	*	*	*	*	.	X	.
GROUP 23		68	40	53	59	80	47	63
154	INDUSTRIAL ENG. TECHNICIANS	*	*	*	*	.	*	X
164	AIR TRAFFIC CONTROLLERS	*	*	.	*	*	*	*
173	TECH. EX. HEALTH,ENG.,& SCI.,NEC	*	*	*	*	.	*	*
182	DANCERS	*	*	*	*	*	.	X
191	PHOTOGRAPHERS	*	*	*	X	*	X	X
360	PAYROLL & TIMEKEEPING CLERKS	*	*	*	.	.	*	.

JOB ATTRIBUTE:	PSYCHOMOTOR ABILITIES							MOTOR ACTIVITIES							
	FINGER DEX	MANUAL DEX	MOTOR COORD	FORM PERC	COLOR DISC	THINGS	SPATIAL	DIM 10	DIM 16	DIM 15	DIM 13	DIM 12	DIM 9	DIM 11	DIM 14
GROUP 24	58	40	53	60	86	52	61								
26 HOME MANAGEMENT ADVISORS	*	*	*	*	*	X	*								
65 HEALTH TECHNOL. & TECHNIC., NEC	*	*	*	X	.	*	X								
163 ART, DRAMA, & MUSIC TEACHERS,COL	*	*	*	*	.	.	*								
191 ADULT EDUCATION TEACHERS,EXC.COL	*	*	*	X	*	*	X								
195 TEACHERS, EXC. COLLEGE, NEC	*	*	*	*	.	*	*								
221 OFFICERS, PILOTS, & PURSERS;SHIP	.	*	*	X	.	*	X								
310 CASHIERS	*	*	*	*	.	*	.								
362 TEACHER AIDES, EXC. SCHOOL MON.	*	*	*	*	.	.	.								
704 COND. & MTRMEN.,URB. RAIL TRANS.	.	*	*	.	.	*	*								
GROUP 25	91	91	80	79	69	89	84								
153 ELECTRIC. & ELECTRON. ENG. TECH.	*	*	*	X	.	X	X								
155 MECHANICAL ENG. TECHNICIANS	*	*	*	*	.	X	X								
165 EMBALMERS	X	*	*	X	*	X	*								
171 RADIO OPERATORS	X	*	*	*	.	X	*								
341 BOOKKEEPING & BILLING MACH. OPR.	X	*	*	*	.	X	.								
416 CARPENTER APPRENTICES	*	X	*	*	.	X	X								
420 CARPET INSTALLERS	*	*	*	*	*	X	*								
425 DECORATORS & WINDOW DRESSERS	*	X	*	X	X	X	X								
461 MACHINISTS	*	X	*	X	.	X	X								
462 MACHINIST APPRENTICES	*	X	*	*	.	X	X								
491 MECHANIC, EXC. AUTO, APPRENTICES	*	X	*	X	.	X	X								
523 PLUMBER & PIPE FITTER APPRENT.	*	X	*	*	.	X	*								
536 SHEETMETAL APPRENTICES	*	*	*	*	.	X	X								
551 TAILORS	*	*	*	*	*	*	X								
562 TOOL & DIE MAKER APPRENTICES	X	X	*	X	.	X	X								
GROUP 26	95	97	92	87	81	81	92								
163 DESIGNERS	X	*	*	X	*	X	X								
502 MILLWRIGHTS	*	X	*	*	.	X	X								
GROUP 27	96	88	97	76	79	58	33								
61 CHIROPRACTORS	X	X	X	X	.	*	X								

84	THERAPY ASSISTANTS	X	X	X	*	.	*	*
124	COACHES & PHYS. ED. TEACHERS,COL	X	X	X	*	.	.	*
143	PREKIND. & KINDERGARTEN TEACHERS	*	*	*	.	*	.	.
301	BANK TELLERS	X	*	X	*	.	*	.
370	SECRETARIES, LEGAL	X	*	X	X	.	X	.
371	SECRETARIES, MEDICAL	X	*	X	X	.	X	.
372	SECRETARIES, NEC	X	*	X	X	.	X	.
GROUP 28		23	17	17	78	28	36	86
3	COMPUTER PROGRAMMERS	.	.	.	*	.	.	X
5	COMPUTER SPECIALISTS, N.E.C.	.	.	.	X	.	X	X
34	ACTUARIES	.	.	.	*	.	.	.
35	MATHEMATICIANS	.	.	.	*	.	.	X
36	STATISTICIANS	.	.	.	X	.	.	X
43	ATMOSPHERIC & SPACE SCIENTISTS	.	*	.	X	.	X	X
94	SOCIOLOGISTS	.	.	.	.	.	.	.
96	SOCIAL SCIENTISTS, NEC	.	.	.	*	.	.	*
GROUP 29		2	1	2	40	41	19	45
1	ACCOUNTANTS	.	.	.	.	.	.	.
55	OPERAT. & SYST. RESEARC. & ANAL.	.	.	.	*	.	.	X
91	ECONOMISTS	.	.	.	*	.	.	.
GROUP 30		2	2	2	33	24	17	36
4	COMPUTER SYSTEMS ANALYSTS	.	.	.	X	.	.	X
30	JUDGES	.	.	.	.	.	.	.
31	LAWYERS	.	.	.	.	.	.	.
56	PERSONNEL & LABOR REL. WORKERS	.	.	.	.	.	.	.
82	HEALTH REC. TECHNOL. & TECHNIC.	.	.	.	.	.	.	.
86	CLERGYMEN	.	.	.	.	.	.	.
93	PSYCHOLOGISTS	.	*	.	*	.	.	*
102	AGRICULTURE TEACHERS, COLLEGE	.	.	.	*	.	.	*
140	TEACHERS, COL., SUBJ. NOT SPEC.	.	.	.	*	.	.	*
174	VOCATIONAL AND EDUCAT COUNSELORS	.	.	.	.	.	.	.
194	EDITORS & REPORTERS	.	.	.	*	.	.	*
192	PUB. REL. MEN & PUBLICITY WRITER	.	.	.	*	.	.	*
195	RESEARCH WORKERS, NOT SPECIFIED	.	.	.	X	.	.	X
201	ASS.,CON.,& TREAS.,LOC. PUB. AD.	.	.	.	*	.	.	*
202	BANK OFFICERS & FINANC. MANAGERS	.	.	.	.	.	.	.
203	BUYERS & SHIPPERS, FARM PRODUCTS	.	.	.	*	.	.	*
210	CREDIT MEN	.	.	.	.	.	.	.
212	HEALTH ADMINISTRATORS	.	.	.	*	.	.	*
222	OFFICIALS & ADM., PUB. ADM., NEC	.	.	.	*	.	.	*
225	PURCHASING AGENTS & BUYERS, NEC	.	.	.	*	.	.	*
235	SCHOOL ADMINISTRATORS, COLLEGE	.	.	.	*	.	.	.
240	SCHOOL ADMINISTRAT.,ELEM. & SEC.	.	.	.	*	.	.	.
245	MANAGERS AND ADMINISTRATORS, NEC	.	.	.	*	.	.	*
265	INS. AGENTS,BROKERS,& UNDERWRIT.	.	.	.	*	.	.	.
270	REAL ESTATE AGENTS & BROKERS	.	.	.	*	.	.	*

JOB ATTRIBUTE:	PSYCHOMOTOR ABILITIES							MOTOR ACTIVITIES							
	FINGER DEXTERITY	MANUAL DEXTERITY	MOTOR COORDINATION	FINGER DEXTERITY	COLOR DISCRIMINATION	TRUNK MOVEMENT	SPATIAL APTITUDE	DIM 10	DIM 06	DIM 05	DIM 03	DIM 02	DIM 09	DIM 11	DIM 14
GROUP 30 -- CONT.															
271 STOCK & BOND SALESMEN	•	•	•	•	•	•	•								
363 REAL ESTATE APPRAISERS	•	•	•	•	•	•	•								
GROUP 31	62	36	66	86	80	78	92								
6 AERONAUT. & ASTRONAUT. ENGINEERS	*	*	*	X	•	*	X								
10 CHEMICAL ENGINEERS	*	*	*	X	•	X	X								
11 CIVIL ENGINEERS	*	*	*	X	•	*	X								
156 MATHEMATICAL TECHNICIANS	*	*	*	*	•	X	X								
GROUP 32	66	37	53	92	85	52	96								
2 ARCHITECTS	*	*	*	X	*	*	X								
12 ELECTRICAL & ELECTRONIC ENGINRS.	*	*	*	X	•	*	X								
13 INDUSTRIAL ENGINEERS	*	*	*	X	•	•	X								
14 MECHANICAL ENGINEERS	*	*	*	X	•	X	X								
20 MINING ENGINEERS	*	*	*	X	•	X	X								
21 PETROLEUM ENGINEERS	*	*	*	X	•	*	X								
23 ENGINEERS, NEC	*	*	*	X	•	X	X								
33 ARCHIVISTS AND CURATORS	*	*	•	X	*	*	X								
45 CHEMISTS	*	*	*	X	X	X	X								
51 GEOLOGISTS	*	*	*	X	•	X	X								
53 PHYSICISTS AND ASTRONOMERS	*	*	*	X	*	*	X								
95 URBAN & REGIONAL PLANNERS	*	•	*	X	•	•	X								
GROUP 33	60	37	52	62	57	52	62								
22 SALES ENGINEERS	*	*	*	*	•	X	X								
75 REGISTERED NURSES	*	*	*	*	*	*	*								
76 THERAPISTS	*	*	*	*	•	*	*								
143 HEALTH SPECIALITIES TEACHERS,COL	*	*	*	*	•	*	*								
144 SECONDARY SCHOOL TEACHERS	•	•	*	*	•	*	*								
GROUP 34	96	91	76	94	94	87	91								

15	METALLURG. & MATERIALS ENGINRS.	*	*	*	*	*	X	X
42	AGRICULTURAL SCIENTISTS	X	X	*	X	.	X	X
44	BIOLOGICAL SCIENTISTS	X	*	*	X	*	X	X
52	MARINE SCIENTISTS	*	*	*	X	*	*	X
54	LIFE & PHYSICAL SCIENTISTS, NEC	*	*	*	X	.	X	X
64	PHARMACISTS	X	*	.	X	X	X	.
72	VETERINARIANS	X	X	*	X	*	X	X
80	CLIN. LAB. TECHNOLOG. & TECHNIC.	X	X	*	X	*	X	X
152	DRAFTSMEN	X	*	X	X	.	X	X
GROUP 35		77	58	96	91	82	52	86
73	HEALTH PRACTITIONERS, NEC	*	*	X	X	*	X	X
163	AIRPLANE PILOTS	*	*	*	X	.	*	X
165	MUSICIANS & COMPOSERS	*	*	*	*	.	.	*
GROUP 36		97	98	95	99	93	89	96
62	DENTISTS	X	X	*	X	.	X	X
63	OPTOMETRISTS	*	*	*	X	*	X	X
65	PHYSICIANS, MEDICAL & OSTEOPATH.	X	X	X	X	*	X	X
81	DENTAL HYGIENISTS	X	X	X	*	*	X	X
83	RADIOLOGIC TECHNOLOG. & TECHNIC.	X	X	*	X	*	X	X
OCCUPATIONS THAT WERE NOT GROUPED BECAUSE OF LACK OF DATA TO DO SO								
103	ATMO.,EARTH,MAR.& SPACE TEACH.COL	-	-	-	-	-	-	-
104	BIOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-
105	CHEMISTRY TEACHERS, COLLEGE	-	-	-	-	-	-	-
110	PHYSICS TEACHERS, COLLEGE	-	-	-	-	-	-	-
111	ENGINEERING TEACHERS, COLLEGE	-	-	-	-	-	-	-
112	MATHEMATICS TEACHERS, COLLEGE	-	-	-	-	-	-	-
114	PSYCHOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-
115	BUSINESS & COMMERCE TEACHERS.COL	-	-	-	-	-	-	-
116	ECONOMICS TEACHERS, COLLEGE	-	-	-	-	-	-	-
120	HISTORY TEACHERS, COLLEGE	-	-	-	-	-	-	-
121	SOCIOLOGY TEACHERS, TEACHERS	-	-	-	-	-	-	-
122	SOCIAL SCIENCE TEACHERS, NEC.COL	-	-	-	-	-	-	-
125	EDUCATION TEACHERS, COLLEGE	-	-	-	-	-	-	-
126	ENGLISH TEACHERS, COLLEGE	-	-	-	-	-	-	-
130	FOREIGN LANGUAGE TEACHERS.COL	-	-	-	-	-	-	-
131	HOME ECONOMICS TEACHERS, COL	-	-	-	-	-	-	-
132	LAW TEACHERS, COLLEGE	-	-	-	-	-	-	-
133	THEOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-
134	TRADE,IND.,& TECH. TEACHERS.COL	-	-	-	-	-	-	-
170	FLIGHT ENGINEERS	-	-	-	-	-	-	-
383	TELEGRAPH MESSENGERS	-	-	-	-	-	-	-
475	DATA PROCESSING MACH. REPAIRMEN	-	-	-	-	-	-	-
512	PAPERHANGERS	-	-	-	-	-	-	-
625	CHAINMEN,RODMEN,& AXMEN;SURVEY.	-	-	-	-	-	-	-
634	MEAT WRAPPERS, RETAIL TRADE	-	-	-	-	-	-	-
770	WAREHOUSEMEN, NEC	-	-	-	-	-	-	-

JOB ATTRIBUTE:	PSYCHOMOTOR ABILITIES							MOTOR ACTIVITIES							
	FINGER DEX	MANUAL DEX	MOTOR COORD	FORM PERCEP	COLOR DISCRIM	THINGS	SPATIAL	DIM 10	DIM 16	DIM 15	DIM 13	DIM 12	DIM 9	DIM 11	DIM 14
OCCUPATIONS NOT GROUPED -- CONT.															
823 FARM LABORERS,UNPAID FAM. WORKER	-	-	-	-	-	-	-								
923 HEALTH TRAINEES	-	-	-	-	-	-	-								
952 SCHOOL MONITORS	-	-	-	-	-	-	-								
954 WELFARE SERVICE AIDES	-	-	-	-	-	-	-								
963 MARSHALS & CONSTABLES	-	-	-	-	-	-	-								

Appendix E

Dealing with People and Interpersonal Activities of Different Occupations

Key

Numbers next to the group numbers are percentiles for the group average on the variable in question.

· A low score

* A moderate score

X A high score

- Data are not available.

Note

Data for the PAQ variables have been omitted pending permission from PAQ Services to release these data (per our agreement in purchasing their proprietary data).

JOB ATTRIBUTE:	DEAL WITH PEOPLE			INTERPERSONAL ACTIVITIES													
	DEPL	PEOPLE	RECNT	INFLU	PERSUADE	INSTRUCT	ADVISE	NEGOTIAT	COORDIN	DIM19	SUPERVIS	DCP	STAFFUNC	PUBSREAK	ENTERTAIN	CATER	DIM21
CORRELATION WITH: ACADEMIC ABILITIES	.44	.59	.49	.35	.60	.48	.70	.60	.58	.06	.27	.58	.69	.56	.14	.01	.07
MOTOR ABILITIES	-.40	-.29	-.20	-.33	-.41	-.22	-.37	-.46	-.36	-.16	-.12	-.32	-.37	-.35	-.05	-.08	-.25
DEALING WITH PEOPLE	1.00	.75	.61	.50	.68	.45	.59	.62	.54	.18	.45	-.60	.49	.55	.29	.34	.38
GROUP 1	0	14		0													
626 HEATERS, METAL	•	•		•													
753 FREIGHT & MATERIAL HANDLERS	•	•		•													
760 LONGSHOREMEN & STEVEDORES	•	•		•													
762 STOCK HANDLERS	•	•		•													
901 CHMBRMDS. & MDS.,EXC. PRI. HSHD.	•	•		•													
902 CLEANERS & CHARWOMEN	•	•		•													
913 DISHWASHERS	•	•		•													
GROUP 2	60	53		78													
989 LAUNDRESSES, PRIVATE HOUSEHOLD	•	•		•													
443 FURNITURE & WOOD FINISHERS	*	•		•													
705 DELIVERYMEN & ROUTEMEN	*	*		•													
953 USHERS,RECREATION & AMUSEMENT	*	*		•													
960 CROSSING GUARDS & BRIDGE TENDERS	*	*		•													
984 MAIDS & SERVANTS,PRIV. HOUSEHOLD	*	•		•													
GROUP 3	78	50		78													
711 PARKING ATTENDANTS	X	*		•													
911 BUSBOYS	*	•		•													
933 ATTENDANTS, PERSONAL SERVICE,NEC	X	•		•													
934 BAGGAGE PORTERS & BELLHOPS	X	*		•													
941 BOOTBLACKS	X	•		•													
943 ELEVATOR OPERATORS	*	•		•													
980 CHILD CARE WORKERS,PRI. HOUSEHD.	X	•		•													
GROUP 4	33	21		0													
344 DUPLICATING MACHINE OPERATORS	•	•		•													
355 OFFICE MACHINE OPERATORS, NEC	•	•		•													

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392	WEIGHERS	•	•	|	•
401	AUTOMOBILE ACCESSORIES INSTALLER	•	•	|	•
402	BAKERS	•	•	|	•
403	BLACKSMITHS	•	•	|	•
405	BOOKBINDERS	•	•	|	•
412	BULLDOZER OPERATORS	•	•	|	•
421	CEMENT & CONCRETE FINISHERS	•	*	|	•
424	CRANEMEN, DERRICKMEN, & HOISTMEN	•	•	|	•
435	ENGRAVERS, EXC. PHOTOENGRAVERS	•	•	|	•
436	EXCAV,GRAD,& RD MACH OP; EX BDZR	•	•	|	•
442	FORGEMEN & HAMMERMEN	•	•	|	•
445	GLAZIERS	*	•	|	•
446	HT. TREATERS,ANNEAL.,& TEMPERERS	•	•	|	•
450	INSP.,SCALERS,& GRAD.;LOG & LUM.	•	•	|	•
455	LOCOMOTIVE ENGINEERS	•	•	|	•
483	LOOM FIXERS	•	•	|	•
495	NOT SPEC. MECHANICS & REPAIRMEN	•	•	|	•
501	MILLERS; GRAIN, FLOUR, & FEED	•	•	|	•
503	MOLDERS, METAL	•	•	|	•
530	PRSSMN. & PLATE PRNTRS.,PRINTING	•	•	|	•
533	ROLLERS & FINISHERS, METAL	•	•	|	•
546	STONE CUTTERS & STONE CARVERS	•	•	|	•
560	TILE SETTERS	•	•	|	•
563	UPHOLSTERERS	•	•	|	•
601	ASBESTOS & INSULATION WORKERS	•	•	|	•
602	ASSEMBLERS	•	•	|	•
603	BLASTERS & POWDERMEN	•	•	|	•
604	BOTTLING & CANNING OPERATIVES	•	•	|	•
610	CHECKERS,EXAM.,& INSPECT.;MANUF.	•	•	|	•
611	CLOTHING IRONERS & PRESSERS	•	•	|	•
612	CUTTING OPERATIVES, NEC	•	•	|	•
620	DYERS	•	•	|	•
621	FILERS,POLISH.,SANDERS,& BUFFERS	•	•	|	•
622	FURNACEMEN,SMELTERMEN,& POURERS	•	•	|	•
624	GRADERS & SORTERS, MANUFACTURING	•	•	|	•
625	PROD GRAD & PACK,EXC FACT & FARM	•	•	|	•
630	LAUN. & DRY CLEAN. OPERATIV.,NEC	•	•	|	•
633	MEAT CUTTERS & BUTCHERS,MANUF.	•	•	|	•
636	MILLINERS	•	•	|	•
640	MINE OPERATIVES,NEC	•	•	|	•
641	MIXING OPERATIVES	•	•	|	•
642	OILERS & GREASERS, EXC. AUTO	•	•	|	•
643	PACKERS & WRAP.,EX. MEAT & PROD.	•	•	|	•
644	PAINTERS, MANUFACTURED ARTICLES	•	•	|	•
650	DRILL PRESS OPERATIVES	•	•	|	•
651	GRINDING MACHINE OPERATIVES	•	•	|	•
652	LATHE & MILLING MACH. OPERATIVES	•	•	|	•
653	PRECISION MACH. OPERATIVES, NEC	•	•	|	•
656	PUNCH & STAMP. PRESS OPERATIVES	•	•	|	•
660	RIVETERS & FASTENERS	•	•	|	•
662	SAWYERS	•	•	|	•
664	SHOEMAKING MACHINE OPERATIVES	•	•	|	•
665	SOLDERERS	•	•	|	•
666	STATIONARY FIREMEN	•	•	|	•
670	CARDING,LAPPING, & COMBING OPER.	•	•	|	•

JOB ATTRIBUTE:	DEAL WITH PEOPLE			INTERPERSONAL ACTIVITIES														
	DEPL	PEOPLE	RECONT	INFLU	PERSUADE	INSTRUCT	ADVISE	NEGOTIAT	COORDIN	DIM19	SUPERVIS	DCP	STAFFUNC	PUBSPEAK	ENTERTN	CATER	DIM21
GROUP 4 -- CONT.																	
672 SPINNERS,TWISTERS,& WINDERS	•	•		•													
673 WEAVERS	•	•		•													
674 TEXTILE OPERATIVES,NEC	•	•		•													
680 WELDERS & FLAME-CUTTERS	•	•		•													
681 WINDING OPERATIVES, NEC	•	•		•													
690 MACHINE OPERATIVES, MISC. SPEC.	•	•		•													
692 MACHINE OPERATIVES,NOT SPECIFIED	•	•		•													
694 MISCELLANEOUS OPERATIVES	•	•		•													
695 NOT SPECIFIED OPERATIVES	•	•		•													
706 FORK LIFT & TOW MOTOR OPERATIVES	•	•		•													
710 MTRMEN.;MINE,FACT.,LOG. CAMP,ETC	•	•		•													
713 RAILROAD SWITCHMEN	•	•		•													
715 TRUCK DRIVERS	•	•		•													
750 CARPENTERS' HELPERS	•	*		•													
751 CONSTR. LABORERS,EX. CARP. HELP.	•	•		•													
752 FISHERMEN & OYSTERMEN	•	•		•													
755 GARDENERS & GRNDSKPRS.,EXC.FARM	•	•		•													
761 LUMBERMEN,RAFTSMEN,& WOODCHOP.	•	•		•													
763 TEAMSTERS	•	•		•													
764 VEHICLE WASHERS & EQ. CLEANERS	•	•		•													
780 MISC. LABORERS	•	•		•													
785 NOT SPECIFIED LABORERS	•	•		•													
822 FARM LABORERS, WAGE WORKERS	•	•		•													
903 JANITORS & SEXTONS	•	•		•													
GROUP 5	59	49		0													
333 MESSENGERS & OFFICE BOYS	*	•		•													
623 GARAGE WORKERS & GAS STAT. ATT.	*	•		•													
701 BOATMEN & CANALMEN	*	*		•													
712 RAILROAD BRAKEMEN	*	*		•													
714 TAXICAB DRIVERS & CHAUFFEURS	*	•		•													
740 ANIMAL CARETAKERS, EXC. FARM	*	•		•													
754 GARBAGE COLLECTORS	*	•		•													
916 FD SERV WORKERS,NEC EX PRI HSHD	*	•		•													
GROUP 6	72	33		85													

914	FOOD COUNTER & FOUNTAIN WORKERS	X	•	•
942	CHILD CARE WORKERS,EX. PR. HSHD.	*	•	*
GROUP 7		35	20	0
361	POSTAL CLERKS	•	•	•
444	FURRIERS	•	•	•
453	JEWELERS & WATCHMAKERS	•	•	•
542	SHOE REPAIRMEN	•	•	•
631	MEAT CUTTERS & BUTCHERS,EXC MAN.	•	•	•
663	SEWERS & STITCHERS	•	•	•
671	KNITTERS,LOOPERS,& TOPPERS	•	•	•
GROUP 8 -- NO OCCUPATIONS IN THIS GROUP				
GROUP 9 -- NO OCCUPATIONS IN THIS GROUP				
GROUP 10		0	34	0
362	PROOFREADERS	•	•	•
GROUP 11		60	52	78
323	EXPEDITERS & PRODUCTION CONTROL.	*	•	•
330	LIBRARY ATTENDANTS & ASSISTANTS	*	•	•
332	MAIL HANDLERS,EXCEPT POST OFFICE	*	•	•
381	STOCK CLERKS & STOREKEEPERS	*	•	-
395	NOT SPECIFIED CLERICAL WORKERS	*	*	•
910	BARTENDERS	*	•	•
981	COOKS, PRIVATE HOUSEHOLD	*	*	•
GROUP 12		80	78	84
175	ACTORS	X	*	•
226	RAILROAD CONDUCTORS	X	*	•
264	HUCKSTERS & PEDDLERS	X	*	*
266	NEWSBOYS	X	*	X
313	COLLECTORS, BILL & ACCOUNT	X	*	*
314	COUNTER CLERKS, EXCEPT FOOD	X	*	•
315	DISPATCHERS & STARTERS, VEHICLE	X	*	•
320	ENUMERATORS & INTERVIEWERS	X	*	•
364	RECEPTIONISTS	X	*	•
932	ATTENDANTS, RECREAT. & AMUSEMENT	X	*	•
940	BOARDING & LODGING HOUSE KEEPERS	*	*	•
950	HOUSEKEEPERS,EXC. PRIV. HSEHLD.	X	*	•
962	GUARDS & WATCHMEN	X	*	•
965	SHERIFFS & BAILIFFS	X	*	•
982	HOUSEKEEPERS, PRIVATE HOUSEHOLD	*	*	•

JOB ATTRIBUTE:	DEAL WITH PEOPLE			INTERPERSONAL ACTIVITIES														
	DEPL	PEOPLE	RECONT	INFLU	PERSUADE	INSTRUCT	ADVISE	NEGOTIAT	COUNSLN	DIM19	SUPERVIS	DCP	STAFFUNC	PUBSPEAK	ENTERTN	CATER	DIM21
GROUP 13	37	33		0	44												
150 AGRIC. & BIO. TECH., EXC. HEALTH	.	.		.	.												
303 BILLING CLERKS	.	.		.	.												
342 CALCULATING MACHINE OPERATORS	.	.		.	.												
343 COMPUTER & PERIPH. EQUIP. OPER.	.	.		.	.												
345 KEY PUNCH OPERATORS	.	.		.	.												
350 TABULATING MACHINE OPERATORS	.	.		.	.												
374 SHIPPING & RECEIVING CLERKS	.	.		.	.												
375 STATISTICAL CLERKS	.	.		.	.												
410 BRICKMASONS & STONEMASONS	.	.		.	.												
415 CARPENTERS	.	.		.	.												
422 COMPOSITORS & TYPESETTERS	.	.		.	*												
440 FLOOR LAYERS, EXC. TILE SETTERS	.	.		.	-												
452 INSPECTORS, NEC	.	.		.	.												
454 JOB & DIE SETTERS, METAL	.	.		.	.												
456 LOCOMOTIVE FIREMEN	.	*		.	-												
470 AIR CON.,HT.,& REF. MECH. & REP.	.	.		.	.												
472 AUTOMOBILE BODY REPAIRMEN	.	.		.	*												
473 AUTOMOBILE MECHANICS	.	.		.	.												
480 FARM IMPLEMENT MECH. & REPAIRMEN	.	.		.	.												
482 HSEHLD APPL. & ACC. INST. & MECH	.	.		.	.												
486 RLRD. & CAR SHOP MECH. & REPRMN.	.	.		.	.												
492 MISC. MECHANICS & REPAIRMEN	.	.		.	.												
506 OPTIC., & LENS GRIND. & POLISH.	.	.		.	-												
510 PAINTERS,CONSTRUCTION & MAINTEN.	*	.		.	.												
516 PIANO & ORGAN TUNERS & REPAIRMEN	.	.		.	-												
520 PLASTERERS	.	*		.	.												
521 PLASTERER APPRENTICES	.	*		.	-												
531 PRESSMAN APPRENTICES	.	.		.	X												
535 SHEETMETAL WORKERS & TINSMITHS	.	.		.	.												
545 STATIONARY ENGINEERS	.	.		.	.												
550 STRUCTURAL METAL CRAFTSMEN	.	.		.	.												
575 CRAFTSMEN & KINDRED WORKERS, NEC	.	.		.	.												
614 DRILLERS, EARTH	.	.		.	-												
635 METAL PLATERS	.	.		.	.												
645 PHOTOGRAPHIC PROCESS WORKERS	.	.		.	.												
801 FARMERS(OWNERS & TENANTS)	.	*		.	.												

GROUP 14		59	70		78
180	ATHLETES & KINDRED WORKERS	*	*		•
325	FILE CLERKS	*	*		•
331	MAIL CARRIERS, POST OFFICE	*	*		•
394	MISCELLANEOUS CLERICAL WORKERS	*	•		•
404	BOILERMAKERS	*	*		•
433	ELECT. POWER LINEMEN & CABLEMEN	*	*		•
434	ELECTROTYPERS & STEREOTYPERS	*	•		•
505	MOTION PICTURE PROJECTIONISTS	*	*		•
522	PLUMBERS & PIPE FITTERS	*	*		•
525	POWER STATION OPERATORS	*	*		•
534	ROOFERS & SLATERS	*	*		•
552	TELEPHONE INSTALLERS & REPAIRMEN	*	*		•
554	TELEPHONE LINEMEN & SPLICERS	*	*		•
661	SAILORS & DECKHANDS	*	*		•
824	FARM SERVICE LABORERS,SELF-EMPL.	*	*		*
912	COOKS, EXC. PRIV. HOUSEHOLD	*	*		•
921	DENTAL ASSISTANTS	*	•		•
922	HEALTH AIDES, EXC. NURSING	*	•		•
961	FIREMEN, FIRE PROTECTION	*	*		•
GROUP 15		79	78		85
71	PODIATRISTS	X	*		•
194	WRITERS,ARTISTS,& ENTERTAIN.,NEC	X	*		•
262	DEMONSTRATORS	X	*		*
283	SALES CLERKS, RETAIL TRADE	X	*		X
284	SALESMEN, RETAIL TRADE	X	*		*
384	TELEGRAPH OPERATORS	X	*		•
385	TELEPHONE OPERATORS	X	*		•
441	FOREMEN, NEC	X	X		•
703	BUS DRIVERS	X	*		•
821	FARM FOREMEN	X	*		•
915	WAITERS	X	*		•
925	NURS. AIDES,ORDERLIES,& ATTEND.	X	•		•
926	PRACTICAL NURSES	*	•		•
GROUP 16		36	28		0
190	PAINTERS & SCULPTORS	•	•		•
391	TYPISTS	•	•		•
413	CABINETMAKERS	*	•		•
423	PRINT. TRADES APPR.,EX. PRESSMEN	•	•		•
426	DENTAL LABORATORY TECHNICIANS	•	•		•
431	ELECTRICIAN APPRENTICES	•	•		•
471	AIRCRAFT MECHANICS & REPAIRMEN	•	•		•
474	AUTOMOBILE MECHANICS APPRENTICES	•	*		•
481	HEAVY EQUIP. MECH., INCL. DIESEL	•	•		•
484	OFFICE MACHINE MECH. & REPAIRMEN	•	•		•
485	RADIO & TV MECHANICS & REPAIRMEN	•	•		•
504	MOLDER APPRENTICES	•	•		•
511	PAINTER APPRENTICES	•	•		•

JOB ATTRIBUTE:	DEAL WITH PEOPLE			INTERPERSONAL ACTIVITIES														
	DEPL	PEOPLE	RECONT	INFLU	PERSUADE	INSTRUCT	ADVISE	NEGOTIAT	COORDIN	DIM19	SUPERVIS	DCP	STAFFUNC	PUBSPEAK	ENTERTN	CATER	DIM21
GROUP 16 -- CONT.																	
514 PAT. & MODEL MAKERS, EXC. PAPER	.	.		.													
515 PHOTOENGRAVERS & LITHOGRAPHERS	.	.		.													
540 SHIPFITTERS	.	.		.													
543 SIGN PAINTERS & LETTERERS	.	.		.													
581 TOOL & DIE MAKERS	.	.		.													
571 SPECIFIED CRAFT APPRENTICES, NEC	.	.		.													
572 NOT SPECIFIED APPRENTICES	.	.		.													
613 DRESSMAKERS & SMSTRSS.,EX. FACT.	.	.		.													
GROUP 17	54	55		0													
376 STENOGRAPHERS	*	*		.													
411 BRICKMASONS & STONEMAS.,APPRENT.	*	.		.													
430 ELECTRICIANS	*	*		.													
615 DRY WALL INSTALLERS & LATHERS	*	*		.													
GROUP 18	82	46		0													
311 CLERICAL ASSIST., SOCIAL WELFARE	X	*		.													
924 LAY MIDWIVES	X	.		.													
935 BARBERS	X	.		.													
944 HAIRDRESSERS & COSMETOLOGISTS	X	.		.													
945 PERSONAL SERVICE APPRENTICES	X	.		.													
GROUP 19	36	57		80													
92 POLITICAL SCIENTISTS	.	*		.													
172 TOOL PROGRAMMERS, NUM. CONTROL	.	*		.													
181 AUTHORS	.	*		.													
GROUP 20	67	56		79													
32 LIBRARIANS	*	*		.													
213 CONSTR. INSPECT., PUBLIC ADMIN.	*	*		.													
215 INSPECT., EXC. CONSTR., PUB. AD.	*	*		.													

321	ESTIMATORS & INVESTIGATORS, NEC	*	•		•
GROUP 21		82	86		91
24	FARM MANAGEMENT ADVISORS	X	*		X
25	FORESTERS & CONSERVATIONISTS	*	*		•
74	DIETITIANS	X	X		•
90	RELIGIOUS WORKERS, NEC	X	X		*
100	SOCIAL WORKERS	X	X		*
101	RECREATION WORKERS	X	*		•
135	MISC. TEACHERS, COLLEGE	X	X		X
142	ELEMENTARY SCHOOL TEACHERS	X	X		*
193	RADIO & TELEVISION ANNOUNCERS	X	*		•
205	BUYERS, WHOLESALE & RETAIL TRADE	X	*		•
211	FUNERAL DIRECTORS	X	*		•
215	MANAGERS & SUPERS., BUILDING	*	*		*
220	OFFICE MANAGERS, NEC	X	*		*
223	OFFIC. OF LODGES, SOC., & UNIONS	X	*		X
224	POSTMASTERS & MAIL SUPERINTEND.	X	*		•
230	REST., CAFETERIA, & BAR MANAGERS	X	*		•
231	SALES MAN. & DEPT. HDS.,RET. TR.	X	*		*
233	SALES MANAGERS,EXC. RETAIL TRADE	X	*		•
260	ADVERTISING AGENTS & SALESMEN	X	*		X
261	AUCTIONEERS	X	*		X
281	SALES REP., MANUFACT. INDUSTRIES	X	*		X
282	SALES REP., WHOLESALE TRADE	X	*		X
285	SALESMEN OF SERV. & CONSTRUCTION	X	*		X
312	CLERICAL SUPERVISORS, NEC	X	X		•
326	INS. ADJUST.,EXAMIN.,& INVESTIG.	*	*		*
334	METER READERS, UTILITIES	*	*		•
390	TICKET, STATION, & EXPR. AGENTS	X	*		•
800	FARM MANAGERS	X	*		•
931	AIRLINE STEWARDESSES	X	*		•
964	POLICEMEN & DETECTIVES	X	*		•
GROUP 22		36	50		0
151	CHEMICAL TECHNICIANS	•	*		•
161	SURVEYORS	•	*		•
162	ENG. & SCIENCE TECHNICIANS, NEC	•	*		•
305	BOOKKEEPERS	•	•		•
GROUP 23		60	70		78
154	INDUSTRIAL ENG. TECHNICIANS	*	*		•
164	AIR TRAFFIC CONTROLLERS	*	*		•
173	TECH. EX. HEALTH,ENG.,& SCI.,NEC	*	•		•
182	DANCERS	*	X		•
191	PHOTOGRAPHERS	*	•		•
360	PAYROLL & TIMEKEEPING CLERKS	*	*		•

JOB ATTRIBUTE:	DEAL WITH PEOPLE			INTERPERSONAL ACTIVITIES													
	DEPL	PEOPLE	REQCOUNT	INFLU	PERSUADE	INSTRUCT	ADVISE	NEGOTIAT	COORDIN	DIM19	SUPERVIS	DCP	STAFFUNC	PUBSPEAK	ENTERTN	CATER	DIM21
GROUP 24	78	89		57													
26 HOME MANAGEMENT ADVISORS	X	X		X													
85 HEALTH TECHNOL. & TECHNIC., NEC	*	*		•													
123 ART, DRAMA, & MUSIC TEACHERS,COL	X	X		*													
141 ADULT EDUCATION TEACHERS,EXC.COL	X	X		*													
145 TEACHERS, EXC. COLLEGE, NEC	X	X		*													
221 OFFICERS, PILOTS, & PURSERS;SHIP	*	*		•													
310 CASHIERS	X	*		•													
382 TEACHER AIDES, EXC. SCHOOL MON.	X	*		•													
704 COND. & MTRMEN.,URB. RAIL TRANS.	X	*		•													
GROUP 25	35	24		78													
153 ELECTRIC. & ELECTRON. ENG. TECH.	•	•		•													
155 MECHANICAL ENG. TECHNICIANS	•	*		•													
165 EMBALMERS	•	•		•													
171 RADIO OPERATORS	•	*		•													
342 BOOKKEEPING & BILLING MACH. OPR.	•	•		•													
416 CARPENTER APPRENTICES	•	•		•													
420 CARPET INSTALLERS	•	•		•													
425 DECORATORS & WINDOW DRESSERS	•	•		*													
461 MACHINISTS	•	•		•													
462 MACHINIST APPRENTICES	•	•		•													
491 MECHANIC, EXC. AUTO, APPRENTICES	•	•		•													
523 PLUMBER & PIPE FITTER APPRENT.	•	•		•													
536 SHEETMETAL APPRENTICES	•	•		•													
551 TAILORS	•	•		•													
562 TOOL & DIE MAKER APPRENTICES	•	•		•													
GROUP 26	54	57		78													
183 DESIGNERS	*	•		•													
502 MILLWRIGHTS	*	*		•													
GROUP 27	83	87		81													
61 CHIROPRACTORS	X	X		•													
84 THERAPY ASSISTANTS	X	*		*													

124	COACHES & PHYS. ED. TEACHERS,COL	X	X		•
143	PREKIND. & KINDERGARTEN TEACHERS	X	X		•
301	BANK TELLERS	X	*		•
370	SECRETARIES, LEGAL	X	*		•
371	SECRETARIES, MEDICAL	X	*		•
372	SECRETARIES, NEC	X	*		•
GROUP 28		33	56		0
3	COMPUTER PROGRAMMERS	•	•		•
5	COMPUTER SPECIALISTS, N.E.C.	•	*		•
34	ACTUARIES	•	*		•
35	MATHEMATICIANS	•	*		•
36	STATISTICIANS	•	*		•
43	ATMOSPHERIC & SPACE SCIENTISTS	•	*		•
94	SOCIOLOGISTS	•	*		•
96	SOCIAL SCIENTISTS, NEC	•	*		•
GROUP 29		53	74		85
1	ACCOUNTANTS	*	*		•
55	OPERAT. & SYST. RESEARC. & ANAL.	*	*		•
91	ECONOMISTS	*	*		*
GROUP 30		80	90		91
4	COMPUTER SYSTEMS ANALYSTS	*	*		•
30	JUDGES	X	X		*
31	LAWYERS	X	X		*
53	PERSONNEL & LABOR REL. WORKERS	X	*		•
82	HEALTH REC. TECHNOL. & TECHNIC.	X	*		•
86	CLERGYMEN	X	X		X
93	PSYCHOLOGISTS	X	*		*
102	AGRICULTURE TEACHERS, COLLEGE	X	X		X
140	TEACHERS, COL., SUBJ. NOT SPEC.	*	X		X
174	VOCATIONAL AND EDUCAT COUNSELORS	X	X		*
184	EDITORS & REPORTERS	X	*		*
192	PUB. REL. MEN & PUBLICITY WRITER	X	*		X
195	RESEARCH WORKERS, NOT SPECIFIED	*	*		•
201	ASS.,CON.,& TREAS.,LOC. PUB. AD.	X	*		*
202	BANK OFFICERS & FINANC. MANAGERS	X	*		•
203	BUYERS & SHIPPERS, FARM PRODUCTS	X	*		*
210	CREDIT MEN	X	*		•
212	HEALTH ADMINISTRATORS	X	X		•
222	OFFICIALS & ADM., PUB. ADM., NEC	X	*		•
225	PURCHASING AGENTS & BUYERS, NEC	X	*		*
235	SCHOOL ADMINISTRATORS, COLLEGE	X	X		*
240	SCHOOL ADMINISTRAT.,ELEM. & SEC.	X	X		X
245	MANAGERS AND ADMINISTRATORS, NEC	X	*		•
265	INS. AGENTS,BROKERS,& UNDERWRIT.	X	*		*
270	REAL ESTATE AGENTS & BROKERS	X	*		X

JOB ATTRIBUTE:	DEAL WITH PEOPLE			INTERPERSONAL ACTIVITIES													
	DEPL	PEOPLE	RECONT	INFLU	PERSUADE	INSTRUCT	ADVISE	NEGOTIAT	COORDIN	DIM19	SUPERVIS	DCP	STAFFUNC	PUBSPEAK	ENTERTN	CATER	DIM21
GROUP 30 - - CONT.																	
271 STOCK & BOND SALESMEN	X	*		X													
363 REAL ESTATE APPRAISERS	X	*		•													
GROUP 31	42	55		79													
6 AERONAUT. & ASTRONAUT. ENGINEERS	•	*		•													
10 CHEMICAL ENGINEERS	•	*		•													
11 CIVIL ENGINEERS	*	*		•													
156 MATHEMATICAL TECHNICIANS	•	•		•													
GROUP 32	59	70		82													
2 ARCHITECTS	*	*		*													
12 ELECTRICAL & ELECTRONIC ENGINRS.	*	*		•													
13 INDUSTRIAL ENGINEERS	*	*		•													
19 MECHANICAL ENGINEERS	*	*		•													
20 MINING ENGINEERS	*	*		*													
21 PETROLEUM ENGINEERS	*	*		•													
23 ENGINEERS, NEC	*	*		•													
33 ARCHIVISTS AND CURATORS	*	*		•													
45 CHEMISTS	*	•		•													
51 GEOLOGISTS	*	*		•													
53 PHYSICISTS AND ASTRONOMERS	*	*		•													
95 URBAN & REGIONAL PLANNERS	*	*		•													
GROUP 33	80	93		88													
22 SALES ENGINEERS	X	*		*													
75 REGISTERED NURSES	X	*		•													
76 THERAPISTS	X	X		•													
113 HEALTH SPECIALITIES TEACHERS,COL	X	X		•													
144 SECONDARY SCHOOL TEACHERS	X	X		X													
GROUP 34	36	53		0													
15 METALLURG. & MATERIALS ENGINRS.	•	*		•													

42	AGRICULTURAL SCIENTISTS	.	*	.
44	BIOLOGICAL SCIENTISTS	.	*	.
52	MARINE SCIENTISTS	.	.	.
54	LIFE & PHYSICAL SCIENTISTS, NEC	.	.	.
64	PHARMACISTS	.	*	.
72	VETERINARIANS	.	*	.
80	CLIN. LAB. TECHNOLOG. & TECHNIC.	.	.	.
152	DRAFTSMEN	.	.	.
GROUP 35		59	84	0
73	HEALTH PRACTITIONERS, NEC	*	*	.
163	AIRPLANE PILOTS	*	*	.
185	MUSICIANS & COMPOSERS	*	*	.
GROUP 36		81	95	82
62	DENTISTS	X	X	*
63	OPTOMETRISTS	X	X	.
65	PHYSICIANS, MEDICAL & OSTEOPATH.	X	X	.
81	DENTAL HYGIENISTS	*	*	.
83	RADIOLOGIC TECHNOLOG. & TECHNIC.	*	*	.
OCCUPATIONS THAT WERE NOT GROUPED BECAUSE OF LACK OF DATA TO DO SO				
103	ATMO,EARTH,MAR,& SPACE TEACH,COL	-	-	-
104	BIOLOGY TEACHERS, COLLEGE	-	-	-
105	CHEMISTRY TEACHERS, COLLEGE	-	-	-
110	PHYSICS TEACHERS, COLLEGE	-	-	-
111	ENGINEERING TEACHERS, COLLEGE	-	-	-
112	MATHEMATICS TEACHERS, COLLEGE	-	-	-
114	PSYCHOLOGY TEACHERS, COLLEGE	-	-	-
115	BUSINESS & COMMERCE TEACHERS,COL	-	-	-
116	ECONOMICS TEACHERS, COLLEGE	-	-	-
120	HISTORY TEACHERS, COLLEGE	-	-	-
121	SOCIOLOGY TEACHERS, TEACHERS	-	-	-
122	SOCIAL SCIENCE TEACHERS, NEC,COL	-	-	-
125	EDUCATION TEACHERS, COLLEGE	-	-	-
126	ENGLISH TEACHERS, COLLEGE	-	-	-
130	FOREIGN LANGUAGE TEACHERS,COL	-	-	-
131	HOME ECONOMICS TEACHERS, COL	-	-	-
132	LAW TEACHERS, COLLEGE	-	-	-
133	THEOLOGY TEACHERS, COLLEGE	-	-	-
134	TRADE,IND., & TECH. TEACHERS,COL	-	-	-
170	FLIGHT ENGINEERS	-	-	-
383	TELEGRAPH MESSENGERS	-	-	-
475	DATA PROCESSING MACH. REPAIRMEN	-	-	-
512	PAPERHANGERS	-	-	-
605	CHAINMEN,RODMEN,& AXMEN;SURVEY.	-	-	-
634	MEAT WRAPPERS, RETAIL TRADE	-	-	-
770	WAREHOUSEMEN, NEC	-	-	-

JOB ATTRIBUTE:	DEAL WITH PEOPLE			INTERPERSONAL ACTIVITIES														
	DEPL	PEOPLE	RECONT	INFLU	PERSUADE	INSTRUCT	ADVISE	NEGOTIAT	COORDIN	DIV19	SUPERVIS	DCP	STAFFUNC	PUBSPEAK	ENTERTN	CATER	DIH21
OCCUPATIONS NOT GROUPED -- CONT.																	
923 FARM LABORERS,UNPAID FAM. WORKER	-	-		-													
923 HEALTH TRAINEES	-	-		-													
952 SCHOOL MONITORS	-	-		-													
954 WELFARE SERVICE AIDES	-	-		-													
953 MARSHALS & CONSTABLES	-	-		-													

Appendix F

Other Abilities, Bipolar Interests, and Source of Information in Different Occupations

Key

Numbers next to the group numbers are percentiles for the group average on the variable in question.

· A low score

* A moderate score

X A high score

- Data are not available.

Note

Data for the PAQ variables have been omitted pending permission from PAQ Services to release these data (per our agreement in purchasing their proprietary data).

JOB ATTRIBUTE:	OTHER ABILITIES					BIPOLAR INTERESTS					SOURCES OF INFORMATION								
	CLERICAL	MEMORY	IFTCOOR	EXERTION	STRENGTH	IDEATA	ISCIENCE	ICREATES	IAMACH	IPRODUCT	WRITENT	OUTAN	PICTORAL	PATTERNS	BEHAVIOR	EVENTS	VERBAL	F IF	S JC
CORRELATION WITH: ACADEMIC ABILITIES	.70	.20	-.12	-.49	-.57	.65	.21	.69	-.38	-.35	.66	.56	.38	.08	.46	-.03	.53	.16	.52
MOTOR ABILITIES	-.22	-.03	.20	.27	.30	-.35	.28	.05	.38	.48	-.20	-.19	.11	.24	-.30	-.13	-.17	-.04	-.15
DEALING WITH PEOPLE	.45	.23	-.07	-.38	-.43	.73	-.47	.31	-.68	-.61	.41	.23	.06	-.13	.63	.15	.54	.11	.44
GROUP 1	6		70		82	14	44	7	39	36								0	34
626 HEATERS, METAL	*		*		*	*	*	*	X	*								*	*
753 FREIGHT & MATERIAL HANDLERS	*		*		*	*	*	*	*	*								*	*
760 LONGSHOREMEN & STEVEDORES	*		*		X	*	*	*	*	*								*	*
762 STOCK HANDLERS	*		*		*	*	*	*	*	*								*	*
901 CHMBRMDS. & MDS.,EXC. PRI. HSHD.	*		*		*	*	*	*	*	*								*	*
902 CLEANERS & CHARWOMEN	*		*		*	*	*	*	*	*								*	*
913 DISHWASHERS	*		*		*	*	*	*	*	*								*	*
983 LAUNDRESSES, PRIVATE HOUSEHOLD	*		*		*	*	*	*	*	*								*	*
GROUP 2	38		75		57	47	24	26	40	29								0	45
443 FURNITURE & WOOD FINISHERS	*		*		*	*	*	*	X	*								*	*
705 DELIVERYMEN & ROUTEMEN	*		*		*	*	*	*	*	*								*	*
953 USHERS,RECREATION & AMUSEMENT	*		*		*	*	*	*	*	*								*	*
960 CROSSING GUARDS & BRIDGE TENDERS	*		*		*	*	*	*	X	*								*	*
984 MAIDS & SERVANTS,PRIV. HOUSEHOLD	*		*		*	*	*	*	*	*								*	*
GROUP 3	23		71		61	49	21	22	12	28								83	36
711 PARKING ATTENDANTS	*		*		*	*	*	*	*	*								*	*
911 BUSBOYS	*		*		*	*	*	*	*	*								*	*
933 ATTENDANTS, PERSONAL SERVICE,NEC	*		*		*	*	*	*	*	*								*	*
934 BAGGAGE PORTERS & BELLHOPS	*		*		*	*	*	*	*	*								*	*
941 BOOTBLACKS	*		*		*	*	*	*	*	*								*	*
943 ELEVATOR OPERATORS	*		*		*	*	*	*	*	*								*	*
980 CHILD CARE WORKERS,PRI. HOUSEHD.	*		*		*	*	*	*	*	*								*	*
GROUP 4	15		60		75	24	44	26	62	73								88	40
344 DUPLICATING MACHINE OPERATORS	*		*		*	*	*	*	X	*								*	*
355 OFFICE MACHINE OPERATORS, NEC	*		*		*	*	*	*	X	*								*	*

| | | |

JOB ATTRIBUTE:		OTHER ABILITIES					BIPOLAR INTERESTS						SOURCES OF INFORMATION								
		CLERICAL	MEMORY	IFTCOOR	EXERTION	STRENGTH	IDATA	ISCIENCE	ICREATE	IMACH	IPRODUCT	WRITTEN	QUANT	PICTORAL	PATTERN	SEHAVIOR	EVENTS	VERBALPQ	FIF	SJC
GROUP 4 -- CONT.																				
672	SPINNERS,TWISTERS,& WINDERS	.		.		*	.	*	.	X	*								.	.
673	WEAVERS	.		.		*	.	*	*	X	*								.	.
674	TEXTILE OPERATIVES,NEC	.		.		*	.	*	.	X	*								.	.
680	WELDERS & FLAME-CUTTERS	.		.		*	.	*	*	X	*								.	.
691	WINDING OPERATIVES, NEC	.		.		*	.	*	.	X	*								.	.
690	MACHINE OPERATIVES, MISC. SPEC.	.		.		*	.	*	.	X	*								.	.
692	MACHINE OPERATIVES,NOT SPECIFIED	.		.		*	.	*	.	X	*								.	.
694	MISCELLANEOUS OPERATIVES	.		.		*	.	*	.	*	*								.	.
695	NOT SPECIFIED OPERATIVES	.		.		*	.	*	.	*	*								.	.
706	FORK LIFT & TOW MOTOR OPERATIVES	.		*		*	.	*	.	X	*								.	.
710	MTRMEN.:MINE,FACT.,LOG. CAMP,ETC	.		*		*	.	*	.	X	*								.	.
713	RAILROAD SWITCHMEN	*		.		*	.	*	.	X	*								.	.
715	TRUCK DRIVERS	.		*		*	.	*	.	X	*								.	.
750	CARPENTERS' HELPERS	.		.		X	.	*	.	*	*								.	.
751	CONSTR. LABORERS,EX. CARP. HELP.	.		.		*	.	*	*	X	*								.	.
752	FISHERMEN & OYSTERMEN	.		.		*	.	*	.	X	*								.	*
755	GARDENERS & GRNDSKPRS.,EXC.FARM	.		.		X	.	*	.	X	*								.	*
761	LUMBERMEN,RAFTSMEN,& WOODCHOP.	.		.		X	.	*	.	X	*								.	.
763	TEAMSTERS	.		.		X	.	*	*	*	*								.	.
784	VEHICLE WASHERS & ED. CLEANERS	.		.		*	.	*	.	*	*								.	.
790	MISC. LABORERS	.		.		*	.	*	.	*	*								.	.
795	NOT SPECIFIED LABORERS	.		.		*	.	*	.	*	*								.	.
822	FARM LABORERS, WAGE WORKERS	.		.		*	.	*	.	*	*								.	.
903	JANITORS & SEXTONS	.		.		*	.	*	.	*	*								.	.
GROUP 5		38		82		69	47	29	23	48	35								0	52
333	MESSENGERS & OFFICE BOYS	*		.		.	*	.	.	*	*								.	.
623	GARAGE WORKERS & GAS STAT. ATT.	.		.		*	.	*	.	X	*								.	.
701	BOATMEN & CANALMEN	.		.		*	.	*	.	X	*								.	*
712	RAILROAD BRAKEMEN	.		*		*	.	*	.	X	*								.	*
714	TAXICAB DRIVERS & CHAUFFEURS	.		*		*	.	*	*	X	*								.	*
740	ANIMAL CARETAKERS, EXC. FARM	.		.		*	*	*	*	*	*								.	.
754	GARBAGE COLLECTORS	.		*		*	*	*	.	*	*								.	.
916	FD SERV WORKERS,NEC EX PRI HSHD	.		.		*	.	*	.	*	*								.	.
GROUP 6		23		52		62	58	17	32	8	35								94	62

914	FOOD COUNTER & FOUNTAIN WORKERS	.	.	*	*	.	.	*	*	.	.
942	CHILD CARE WORKERS,EX. PR. HSHD.	.	.	*	*	.	*	.	*	*	*
GROUP 7		24	55	51	21	42	20	64	77	0	48
361	POSTAL CLERKS	X	.	*	.	*	.	*	*	.	.
444	FURRIERS	.	.	*	.	*	.	X	*	.	*
453	JEWELERS & WATCHMAKERS	.	.	.	.	*	.	X	*	.	.
542	SHOE REPAIRMEN	.	.	*	.	*	.	X	*	.	.
631	MEAT CUTTERS & BUTCHERS,EXC MAN.	.	.	*	.	*	.	X	*	.	*
663	SEWERS & STITCHERS	.	.	*	.	*	.	X	*	.	.
671	KNITTERS,LOOPERS,& TOPPERS	.	.	*	.	*	.	X	*	.	.
GROUP 9 -- NO OCCUPATIONS IN THIS GROUP											
GROUP 9 -- NO OCCUPATIONS IN THIS GROUP											
GROUP 10		99	0	10	77	44	13	42	81	0	0
362	PROOFREADERS	X	.	.	*	*	.	*	*	.	.
GROUP 11		66	25	29	56	24	26	36	31	0	52
323	EXPEDITERS & PRODUCTION CONTROL.	*	.	.	*	*	.	*	*	.	.
330	LIBRARY ATTENDANTS & ASSISTANTS	X	.	*	*	*	.	*	*	.	*
332	MAIL HANDLERS,EXCEPT POST OFFICE	*	.	*	*	*	.	*	*	.	.
384	STOCK CLERKS & STOREKEEPERS	*	.	*	.	*	.	*	*	.	.
395	NOT SPECIFIED CLERICAL WORKERS	*	.	.	*	.	*	*	*	.	.
910	BARTENDERS	.	.	*	*	.	.	*	*	.	.
981	COOKS, PRIVATE HOUSEHOLD	.	.	*	.	*	*	*	*	.	*
GROUP 12		59	68	30	74	17	40	32	22	90	48
175	ACTORS	.	.	*	X	*	*	*	*	*	*
226	RAILROAD CONDUCTORS	*	*	*	X	.	*	*	.	.	.
264	HUCKSTERS & PEDDLERS	.	.	*	*	.	*	*	*	.	.
266	NEWSBOYS	.	*	*	.	.	.	*	*	.	.
313	COLLECTORS, BILL & ACCOUNT	*	.	.	*	.	*	*	*	.	.
314	COUNTER CLERKS, EXCEPT FOOD	*	.	.	*	.	.	*	*	.	.
315	DISPATCHERS & STARTERS, VEHICLE	*	.	.	*	.	*	*	*	.	.
320	ENUMERATORS & INTERVIEWERS	*	.	*	X	.	.	*	*	.	*
364	RECEPTIONISTS	*	.	.	*	.	.	*	*	.	.
932	ATTENDANTS, RECREAT. & AMUSEMENT	.	.	*	*	.	.	*	*	.	*
940	BOARDING & LODGING HOUSE KEEPERS	*	.	*	*	.	*	*	*	.	.
950	HOUSEKEEPERS,EXC. PRIV. HSEHLD.	*	.	*	*	.	*	*	.	.	.
962	GUARDS & WATCHMEN	.	.	*	*	.	*	*	*	.	*
965	SHERIFFS & BAILIFFS	*	.	.	*	.	*	*	*	.	*
982	HOUSEKEEPERS, PRIVATE HOUSEHOLD	*	.	*	*	.	*	*	.	.	.

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	CLERICAL	MEMORY	INTCOOR	EXERTION	STRENGTH	IDATA	ISCIENCE	ICREATE	IMACH	IPRODUCT	WRITTEN	QUANT	PICTORAL	PATTERNS	BEHAVIOR	EVENTS	VERBALPQ	FIF	SJC
GROUP 13	48		68		65	37	42	41	67	84								89	51
150 AGRIC. & BIO. TECH., EXC. HEALTH	*		.		*	.	X	*	*	*								.	*
303 BILLING CLERKS	X		.		.	.	*	.	*	*								.	.
342 CALCULATING MACHINE OPERATORS	X		.		.	.	*	.	*	*								.	.
343 COMPUTER & PERIPH. EQUIP. OPER.	*		.		.	*	*	.	X	*								.	.
345 KEY PUNCH OPERATORS	X		.		.	*	*	.	X	*								.	.
350 TABULATING MACHINE OPERATORS	*		.		.	*	*	.	X	*								.	.
374 SHIPPING & RECEIVING CLERKS	*		.		*	.	*	.	*	*								.	.
375 STATISTICAL CLERKS	X		.		.	*	*	.	*	*								.	.
410 BRICKMASONS & STONEMASONS	.		.		*	.	*	*	X	*								.	.
415 CARPENTERS	.		.		*	.	*	*	X	*								.	.
422 COMPOSITORS & TYPESETTERS	*		.		*	.	*	.	X	*								.	.
440 FLOOR LAYERS, EXC. TILE SETTERS	.		.		X	.	*	*	X	X								.	.
452 INSPECTORS, NEC	*		.		*	.	*	*	X	*								.	*
454 JOB & DIE SETTERS, METAL	.		.		*	.	*	*	X	*								.	.
456 LOCOMOTIVE FIREMEN	.		.		*	.	.	.	X	*								.	.
470 AIR CON.,HT.,& REF. MECH. & REP.	.		.		*	*	*	*	X	X								.	.
472 AUTOMOBILE BODY REPAIRMEN	.		.		*	.	*	*	X	*								.	*
473 AUTOMOBILE MECHANICS	.		.		*	.	*	*	X	*								.	.
480 FARM IMPLEMENT MECH. & REPAIRMEN	.		.		*	.	*	*	X	X								.	.
482 HSEHLD APPL. & ACC. INST. & MECH	.		.		*	.	*	*	X	*								.	.
486 RLRD. & CAR SHOP MECH. & REPRMN.	.		.		*	.	*	*	X	*								.	.
492 MISC. MECHANICS & REPAIRMEN	.		.		*	.	*	*	X	*								.	.
506 OPTIC., & LENS GRIND. & POLISH.	.		.		*	.	*	*	X	*								.	*
510 PAINTERS,CONSTRUCTION & MAINTEN.	.		.		*	.	*	*	X	*								.	*
516 PIANO & ORGAN TUNERS & REPAIRMEN	.		.		*	.	*	*	X	X								.	X
520 PLASTERERS	.		.		*	.	*	*	X	X								.	*
521 PLASTERER APPRENTICES	.		*		*	.	*	*	X	X								.	X
531 PRESSMAN APPRENTICES	.		.		*	.	*	*	X	*								.	.
535 SHEETMETAL WORKERS & TINSMITHS	.		.		*	.	*	*	X	*								.	.
545 STATIONARY ENGINEERS	*		.		*	.	*	.	X	*								.	.
550 STRUCTURAL METAL CRAFTSMEN	.		.		*	.	*	*	X	*								.	*
575 CRAFTSMEN & KINDRED WORKERS, NEC	.		.		*	.	*	*	X	*								.	*
614 DRILLERS, EARTH	.		*		*	.	*	*	X	*								.	.
635 METAL PLATERS	.		.		*	.	*	.	X	*								.	.
645 PHOTOGRAPHIC PROCESS WORKERS	.		.		.	.	*	*	X	*								.	*
801 FARMERS(OWNERS & TENANTS)	*		.		*	.	*	*	X	X								.	X

GROUP 14	56	76	61	50	29	44	55	34				84	56
180 ATHLETES & KINDRED WORKERS	•	•	*	*	*	*	*	*				•	*
325 FILE CLERKS	X	•	•	X	*	•	*	*				•	•
331 MAIL CARRIERS, POST OFFICE	X	•	*	*	•	•	*	*				•	•
394 MISCELLANEOUS CLERICAL WORKERS	*	•	•	*	*	•	*	*				•	•
404 BOILERMAKERS	•	•	*	•	*	*	X	*				•	•
433 ELECT. POWER LINEMEN & CABLEMEN	*	•	*	•	*	*	X	*				•	•
434 ELECTROTYPERS & STEREOTYPERS	•	•	*	•	*	*	X	X				•	•
505 MOTION PICTURE PROJECTIONISTS	*	•	*	•	*	*	X	*				•	*
522 PLUMBERS & PIPE FITTERS	•	•	*	*	*	*	X	*				•	•
525 POWER STATION OPERATORS	*	•	*	•	*	*	X	*				•	•
534 ROOFERS & SLATERS	•	*	*	•	*	•	X	*				•	•
552 TELEPHONE INSTALLERS & REPAIRMEN	*	•	*	•	*	*	X	*				•	•
554 TELEPHONE LINEMEN & SPLICERS	•	*	*	•	*	*	X	*				•	•
661 SAILORS & DECKHANDS	•	*	*	•	*	•	X	*				•	*
824 FARM SERVICE LABORERS,SELF-EMPL.	•	•	*	•	•	•	X	•				•	*
912 COOKS, EXC. PRIV. HOUSEHOLD	*	•	*	*	*	*	X	*				*	X
921 DENTAL ASSISTANTS	*	•	•	•	•	•	X	*				•	•
922 HEALTH AIDES, EXC. NURSING	*	•	*	•	*	*	*	*				•	*
951 FIREMEN, FIRE PROTECTION	*	*	*	*	•	*	X	*				•	X
GROUP 15	58	68	49	74	21	49	14	21				91	65
71 PODIATRISTS	*	•	*	*	X	*	•	•				•	*
194 WRITERS,ARTISTS,& ENTERTAIN.,NEC	•	•	*	X	*	*	*	*				*	*
262 DEMONSTRATORS	•	•	•	X	•	*	*	*				*	*
283 SALES CLERKS, RETAIL TRADE	*	•	*	X	•	*	*	*				•	X
284 SALESMEN, RETAIL TRADE	*	•	*	*	•	*	*	*				•	*
384 TELEGRAPH OPERATORS	*	•	•	*	•	•	*	*				•	•
385 TELEPHONE OPERATORS	*	•	•	*	•	•	*	•				•	*
441 FOREMEN, NEC	*	•	*	*	•	*	X	•				•	•
703 BUS DRIVERS	•	*	*	*	•	•	X	*				•	*
821 FARM FOREMEN	*	•	*	*	•	*	X	•				•	*
915 WAITERS	•	•	*	*	•	•	*	*				•	•
925 NURS. AIDES,ORDERLIES,& ATTEND.	•	•	*	*	*	*	•	*				•	*
926 PRACTICAL NURSES	*	•	*	*	*	*	•	*				•	•
GROUP 16	43	70	63	35	43	54	80	93				90	59
190 PAINTERS & SCULPTORS	*	•	•	*	*	X	*	X				*	X
391 TYPISTS	X	•	•	*	*	•	X	*				•	*
413 CABINETMAKERS	*	•	*	•	*	*	X	*				•	*
423 PRINT. TRADES APPR.,EX. PRESSMEN	*	•	*	•	*	*	X	X				•	•
426 DENTAL LABORATORY TECHNICIANS	•	•	•	•	*	*	X	X				•	*
431 ELECTRICIAN APPRENTICES	•	*	*	•	*	*	X	X				•	*
471 AIRCRAFT MECHANICS & REPAIRMEN	•	•	*	•	*	*	X	X				•	•
474 AUTOMOBILE MECHANICS APPRENTICES	•	•	*	•	*	*	X	X				•	X
481 HEAVY EQUIP. MECH., INCL. DIESEL	•	•	*	•	*	*	X	X				•	•
484 OFFICE MACHINE MECH. & REPAIRMEN	•	•	*	*	*	*	X	X				•	•
485 RADIO & TV MECHANICS & REPAIRMEN	•	•	*	•	*	*	X	*				•	•
504 MOLDER APPRENTICES	•	•	*	•	*	•	X	*				•	•
511 PAINTER APPRENTICES	•	*	*	•	*	*	X	X				•	*

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	CLERICAL	MEMORY	IFTCOOR	EXERTION	STRENGTH	IDATA	ISCIENCE	ICREATE	IMACH	IPRODUCT	WRITTEN	QUANT	PICTORAL	PATTERNS	BEHAVIOR	EVENTS	VERBAL	F	SJC
GROUP 16 -- CONT.																			
514 PAT. & MODEL MAKERS, EXC. PAPER	.		.		*	.	*	*	X	X								.	.
515 PHOTOENGRAVERS & LITHOGRAPHERS	.		.		.	.	*	*	X	*								.	*
540 SHIPFITTERS	.		*		X	.	*	*	X	*								.	*
543 SIGN PAINTERS & LETTERERS	.		.		*	.	*	*	X	X								.	*
561 TOOL & DIE MAKERS	.		.		*	.	*	*	X	*								.	.
571 SPECIFIED CRAFT APPRENTICES, NEC	.		.		*	.	*	*	X	X								.	*
572 NOT SPECIFIED APPRENTICES	.		.		*	.	*	*	X	X								.	*
613 DRESSMAKERS & SMSTRSS.,EX. FACT.	.		.		*	.	*	*	X	X								.	.
GROUP 17	60		82		65	53	37	47	70	73								0	43
376 STENOGRAPHERS	X		.		.	X	*	.	X	*								.	.
411 BRICKMASONS & STONEMAS.,APPRENT.	.		.		*	.	*	*	X	*								.	.
430 ELECTRICIANS	*		.		*	.	*	*	X	*								.	.
615 DRY WALL INSTALLERS & LATHERS	.		*		X	.	*	*	X	*								.	.
GROUP 18	59		32		30	74	10	89	35	76								89	79
311 CLERICAL ASSIST., SOCIAL WELFARE	X		.		.	X	.	.	*	*								.	.
924 LAY MIDWIVES	*		.		*	*	.	*	.	*								.	*
935 BARBERS	*		.		*	*	.	X	X	.								.	X
944 HAIRDRESSERS & COSMETOLOGISTS	.		.		.	*	.	*	X	*								.	X
945 PERSONAL SERVICE APPRENTICES	.		.		*	*	.	X	X	X								.	X
GROUP 19	83		0		0	77	88	97	42	89								95	78
92 POLITICAL SCIENTISTS	X		.		.	*	X	X	*	*								.	X
172 TOOL PROGRAMMERS, NUM. CONTROL	*		.		.	*	X	*	X	X								.	.
181 AUTHORS	*		.		.	X	*	X	*	*								X	X
GROUP 20	79		71		27	58	29	47	39	29								90	76
32 LIBRARIANS	X		.		.	X	.	*	*	*								.	X
213 CONSTR. INSPECT., PUBLIC ADMIN.	*		*		*	.	*	*	X	*								.	*
215 INSPECT., EXC. CONSTR., PUB. AD.	*		.		*	*	*	*	*	*								.	*

321	ESTIMATORS & INVESTIGATORS, NEC	*		.	.	*	*	.	*	*		.	*
GROUP 21		71		48	27	83	18	59	12	11		90	78
24	FARM MANAGEMENT ADVISORS	X		.	.	X	*	*	*	.		.	X
25	FORESTERS & CONSERVATIONISTS	.		.	*	*	*	*	*	*		.	*
74	DIETITIANS	*		.	.	X	X	*	*	*		.	*
90	RELIGIOUS WORKERS, NEC	*		.	.	X	.	*	.	.		.	*
100	SOCIAL WORKERS	*		.	.	X	*	*	.	.		.	X
101	RECREATION WORKERS	*		.	.	X	.	*	.	.		.	*
135	MISC. TEACHERS, COLLEGE	X		.	.	X	.	*	.	*		.	.
142	ELEMENTARY SCHOOL TEACHERS	X		.	*	X	*	*	.	*		.	X
193	RADIO & TELEVISION ANNOUNCERS	*		.	*	X	*	*	*	.		.	.
205	BUYERS, WHOLESALE & RETAIL TRADE	*		.	*	*	.	*	*	.		.	X
211	FUNERAL DIRECTORS	*		.	*	*	.	*	*	.		.	X
216	MANAGERS & SUPERS., BUILDING	*		.	.	*	.	*	*	.		.	*
220	OFFICE MANAGERS, NEC	X		.	.	X	.	*	*	.		.	*
223	OFFIC. OF LODGES, SOC., & UNIONS	*		.	.	X	.	*	*	.		.	.
224	POSTMASTERS & MAIL SUPERINTEND.	*		.	.	X	.	.	*	.		.	X
230	REST., CAFETERIA, & BAR MANAGERS	*		.	*	*	.	*	*	.		.	*
231	SALES MAN. & DEPT. HDS.,RET. TR.	*		.	*	*	.	*	*	.		.	X
233	SALES MANAGERS,EXC. RETAIL TRADE	*		.	.	X	.	*	*	.		.	*
260	ADVERTISING AGENTS & SALESMEN	*		.	*	*	.	*	*	*		.	X
261	AUCTIONEERS	*		.	*	X	.	*	*	*		X	X
281	SALES REP., MANUFACT. INDUSTRIES	*		.	*	X	.	*	*	*		.	X
282	SALES REP., WHOLESALE TRADE	*		.	.	X	.	*	*	*		.	X
285	SALESMEN OF SERV. & CONSTRUCTION	*		.	.	X	.	*	*	*		.	*
312	CLERICAL SUPERVISORS, NEC	X		.	.	*	.	*	*	.		.	.
326	INS. ADJUST.,EXAMIN.,& INVESTIG.	X		.	.	X	*	*	*	*		.	*
334	METER READERS, UTILITIES	*		.	*	.	.	*	*	*		.	.
390	TICKET, STATION, & EXPR. AGENTS	X		.	.	*	.	*	*	*		.	*
892	FARM MANAGERS	*		.	*	*	.	*	*	.		.	*
931	AIRLINE STEWARDESSES	X		*	*	X	.	*	*	*		.	*
964	POLICEMEN & DETECTIVES	*		.	*	X	.	*	*	*		.	X
GROUP 22		81		71	24	46	87	44	62	35		0	46
151	CHEMICAL TECHNICIANS	*		.	*	.	X	*	X	*		.	.
161	SURVEYORS	*		*	*	*	X	*	X	*		.	.
162	ENG. & SCIENCE TECHNICIANS, NEC	*		.	*	.	X	*	X	*		.	*
305	BOOKKEEPERS	X		.	.	.	*	.	*	*		.	.
GROUP 23		63		72	29	73	83	87	45	30		95	76
154	INDUSTRIAL ENG. TECHNICIANS	*		.	*	*	*	*	X	*		.	*
164	AIR TRAFFIC CONTROLLERS	*		.	.	X	*	*	.	*		.	X
173	TECH. EX. HEALTH,ENG.,& SCI.,NEC	*		.	*	*	*	*	X	*		.	*
182	DANCERS	.		X	*	X	*	X	*	.		X	X
191	PHOTOGRAPHERS	.		.	*	*	*	*	X	X		*	*
360	PAYROLL & TIMEKEEPING CLERKS	X		.	.	.	*	.	*	*		.	.

JOB ATTRIBUTE:	OTHER ABILITIES					BIPOLAR INTERESTS					SOURCES OF INFORMATION							
	CLERICAL	MEMORY	IFTCOOR	EXERTION	STRENGTH	IDATA	ISCIENCE	ICREATS	IMACH	IPROUCT	WRITTEN	QUANT	PICTURAL	PATTERNS	SEHAVIOR	EVENTS	VERBALPQ	FIF	SJC
GROUP 24	70		79		30	79	26	49	32	24								91	76
26 HOME MANAGEMENT ADVISORS	X		.		*	X	.	*	*	*								.	*
85 HEALTH TECHNOL. & TECHNIC., NEC	*		.		*	*	*	*	*	*								.	*
123 ART, DRAMA, & MUSIC TEACHERS,COL	*		.		*	X	*	X	*	.								*	X
141 ADULT EDUCATION TEACHERS,EXC.COL	*		.		*	X	*	*	.	*								.	X
145 TEACHERS, EXC. COLLEGE, NEC	*		.		.	X	*	*	*	*								.	*
221 OFFICERS, PILOTS, & PURSERS;SHIP	*		.		*	*	*	*	*	.								.	*
310 CASHIERS	*		.		.	*	.	.	*	*								.	.
382 TEACHER AIDES, EXC. SCHOOL MON.	X		.		.	X	.	*	.	*								.	*
704 COND. & MTRMEN.,URB. RAIL TRANS.	.		*		*	*	.	.	X	*								.	X
GROUP 25	49		68		77	35	82	89	81	93								89	51
153 ELECTRIC. & ELECTRON. ENG. TECH.	*		.		*	*	*	*	X	*								.	*
155 MECHANICAL ENG. TECHNICIANS	*		.		*	*	*	*	X	*								.	.
165 EMBALMERS	.		.		X	*	*	*	X	X								.	X
174 RADIO OPERATORS	*		.		.	*	*	*	X	*								.	*
341 BOOKKEEPING & BILLING MACH. OPR.	X		.		.	.	*	.	X	*								.	.
414 CARPENTER APPRENTICES	.		.		*	.	*	*	X	X								.	.
420 CARPET INSTALLERS	.		.		X	.	*	.	X	*								.	.
425 DECORATORS & WINDOW DRESSERS	*		*		*	.	*	*	X	X								*	*
461 MACHINISTS	.		.		*	.	*	*	X	*								.	.
462 MACHINIST APPRENTICES	.		.		*	.	*	*	X	X								.	.
491 MECHANIC, EXC. AUTO, APPRENTICES	.		.		*	.	*	*	X	X								.	.
523 PLUMBER & PIPE FITTER APPRENT.	.		.		X	.	*	*	X	*								.	.
536 SHEETMETAL APPRENTICES	.		.		*	.	*	*	X	X								.	.
551 TAILORS	.		.		.	.	*	*	X	X								.	X
562 TOOL & DIE MAKER APPRENTICES	.		.		*	.	*	*	X	X								.	.
GROUP 26	54		77		62	72	32	96	57	95								97	70
183 DESIGNERS	*		.		.	*	*	X	*	X								X	X
502 MILLWRIGHTS	*		*		*	*	*	*	X	*								.	.
GROUP 27	84		79		29	85	24	54	10	24								0	79
61 CHIROPRACTORS	*		.		*	*	X	*	.	.								.	*

84	THERAPY ASSISTANTS	*	*	*	X	*	*	.	*			.	X
124	COACHES & PHYS. ED. TEACHERS,COL	.	X	*	X	*	*	.	*			.	*
143	PREKIND. & KINDERGARTEN TEACHERS	*	*	*	X	*	*	.	*			.	*
301	BANK TELLERS	X	.	.	*	.	.	*	*			.	.
370	SECRETARIES, LEGAL	X	.	.	X	.	*	*	*			.	X
371	SECRETARIES, MEDICAL	X	.	.	X	.	*	X	*			.	X
372	SECRETARIES, NEC	X	.	.	X	.	*	*	*			.	X
GROUP 28		92	27	10	81	93	92	39	23			90	77
3	COMPUTER PROGRAMMERS	X	.	.	*	X	*	X	*			.	*
5	COMPUTER SPECIALISTS, N.E.C.	X	.	*	*	X	X	*	*			.	.
34	ACTUARIES	X	.	.	*	X	*	*	*			.	.
35	MATHEMATICIANS	*	.	.	X	X	*	X	*			*	*
36	STATISTICIANS	X	.	.	*	X	*	*	*			.	X
43	ATMOSPHERIC & SPACE SCIENTISTS	X	.	*	X	X	*	*	*			.	X
94	SOCIOLOGISTS	*	.	.	X	X	*	*	.			.	X
96	SOCIAL SCIENTISTS, NEC	*	.	.	X	X	*	*	*			.	X
GROUP 29		92	27	8	76	87	89	46	26			91	78
1	ACCOUNTANTS	X	.	.	.	X	*	X	*			.	*
55	OPERAT. & SYST. RESEARC. & ANAL.	*	.	.	X	*	*	*	*			.	*
91	ECONOMISTS	X	.	.	X	X	*	*	*			.	X
GROUP 30		85	27	13	84	24	88	10	10			93	83
4	COMPUTER SYSTEMS ANALYSTS	X	.	.	*	X	*	X	*			.	*
30	JUDGES	*	.	.	X	.	*	.	.			.	*
31	LAWYERS	*	.	.	X	*	X	*	.			.	*
56	PERSONNEL & LABOR REL. WORKERS	*	.	.	X	.	*	*	*			.	X
82	HEALTH REC. TECHNOL. & TECHNIC.	*	.	*	X	*	.	.	.			.	.
86	CLERGYMEN	*	.	*	X	X	X	.	.			X	X
93	PSYCHOLOGISTS	*	.	.	X	X	*	.	.			.	X
102	AGRICULTURE TEACHERS, COLLEGE	X	.	*	X	*	*	.	*			.	X
140	TEACHERS, COL., SUBJ. NOT SPEC.	X	.	.	X	*	*	.	.			.	*
174	VOCATIONAL AND EDUCAT COUNSELORS	*	.	.	X	*	*	.	.			.	X
184	EDITORS & REPORTERS	*	.	.	X	.	*	*	.			*	X
192	PUB. REL. MEN & PUBLICITY WRITER	*	.	.	X	.	*	*	.			*	X
195	RESEARCH WORKERS, NOT SPECIFIED	X	.	.	*	*	*	*	.			.	*
201	ASS.,CON.,& TREAS.,LOC. PUB. AD.	X	.	.	.	.	*	*	.			*	*
202	BANK OFFICERS & FINANC. MANAGERS	*	.	.	*	.	*	*	.			.	*
203	BUYERS & SHIPPERS, FARM PRODUCTS	*	.	.	X	.	*	*	.			.	X
210	CREDIT MEN	X	.	.	X	.	*	*	.			.	X
212	HEALTH ADMINISTRATORS	X	.	.	X	*	*	.	.			.	.
222	OFFICIALS & ADM., PUB. ADM., NEC	*	.	.	*	.	*	*	.			.	X
225	PURCHASING AGENTS & BUYERS, NEC	*	.	.	X	.	*	X	*			.	X
235	SCHOOL ADMINISTRATORS, COLLEGE	X	.	.	*	.	*	*	.			.	*
240	SCHOOL ADMINISTRAT.,ELEM. & SEC.	X	.	.	*	*	*	.	.			.	*
245	MANAGERS AND ADMINISTRATORS, NEC	*	.	.	*	.	*	*	.			.	*
265	INS. AGENTS,BROKERS,& UNDERWRIT.	X	.	.	X	.	*	*	*			.	X
270	REAL ESTATE AGENTS & BROKERS	*	.	.	X	.	*	*	*			.	X

JOB ATTRIBUTE:	OTHER ABILITIES					BIPOLAR INTERESTS					SOURCES OF INFORMATION							
	CLERICAL	MEMORY	INFTCOOR	EXERTION	STRENGTH	IDATA	ISCIENCE	ICREATC	IMACH	IPRODUCT	WRITTEN	QUANT	PICTORAL	PATTRNS	BEHAVIOR	EVENTS	VERBALPQ	F IF	S JC
GROUP 30 -- CONT.																			
271 STOCK & BOND SALESMEN	X		.		.	X	.	*	*	*								.	X
363 REAL ESTATE APPRAISERS	X		.		*	.	X	*	*	*								.	X
GROUP 31	85		58		21	60	93	92	50	35								0	66
6 AERONAUT. & ASTRONAUT. ENGINEERS	X		.		.	*	X	*	*	*								.	*
10 CHEMICAL ENGINEERS	*		.		.	*	X	*	*	*								.	*
11 CIVIL ENGINEERS	X		.		.	*	X	*	*	*								.	.
156 MATHEMATICAL TECHNICIANS	*		.		.	*	X	*	X	*								.	*
GROUP 32	79		56		23	73	88	91	47	29								91	76
2 ARCHITECTS	X		.		.	X	X	X	*	*								*	X
12 ELECTRICAL & ELECTRONIC ENGINRS.	*		.		.	*	X	*	X	*								.	*
13 INDUSTRIAL ENGINEERS	*		.		.	*	X	*	X	*								.	*
14 MECHANICAL ENGINEERS	*		.		.	*	X	*	X	*								.	*
20 MINING ENGINEERS	*		.		*	*	X	*	X	*								.	*
21 PETROLEUM ENGINEERS	*		.		.	X	X	*	*	*								.	*
23 ENGINEERS, NEC	*		.		.	*	*	*	*	*								.	*
33 ARCHIVISTS AND CURATORS	*		.		*	.	*	*	*	*								*	X
45 CHEMISTS	*		.		*	*	X	*	X	*								.	*
51 GEOLOGISTS	*		.		*	*	*	*	*	*								.	*
53 PHYSICISTS AND ASTRONOMERS	*		.		.	*	X	*	*	*								.	X
95 URBAN & REGIONAL PLANNERS	X		.		.	X	*	*	*	.								.	*
GROUP 33	84		72		23	83	87	88	8	21								0	57
22 SALES ENGINEERS	*		.		.	X	*	*	*	*								.	.
75 REGISTERED NURSES	*		.		*	*	X	*	.	*								.	.
76 THERAPISTS	*		.		.	*	*	*	.	*								.	*
113 HEALTH SPECIALITIES TEACHERS,COL	X		.		.	X	X	*	*	.								.	.
144 SECONDARY SCHOOL TEACHERS	X		.		.	X	*	*	.	.								.	*
GROUP 34	66		71		30	59	89	90	47	35								0	56

15	METALLURG. & MATERIALS ENGINRS.	*	.	.	.	X	X	*	*			.	*
42	AGRICULTURAL SCIENTISTS	*	.	*	*	X	*	*	*			.	.
44	BIOLOGICAL SCIENTISTS	*	.	*	*	X	*	*	*			.	*
52	MARINE SCIENTISTS	*	*	*	.	X	*	*	*			.	X
54	LIFE & PHYSICAL SCIENTISTS, NEC	*	.	*	X	X	*	X	*			.	.
64	PHARMACISTS	*	.	*	*	.	*	X	*			.	.
72	VETERINARIANS	*	.	*	*	X	*	*	*			.	.
80	CLIN. LAB. TECHNOLOG. & TECHNIC.	*	.	*	*	X	*	X	*			.	.
152	DRAFTSMEN	X	.	.	*	X	*	X	*			.	.
GROUP 35		85	86	27	77	84	94	32	16			96	81
73	HEALTH PRACTITIONERS, NEC	*	.	*	*	X	*	.	*			.	X
163	AIRPLANE PILOTS	*	X	.	*	*	*	X	*			.	X
185	MUSICIANS & COMPOSERS	X	.	.	X	*	X	*	.			X	X
GROUP 36		59	60	49	50	94	87	8	11			0	66
62	DENTISTS	*	.	*	*	X	*	.	.			.	X
63	OPTOMETRISTS	.	.	*	*	X	*	.	.			.	.
65	PHYSICIANS, MEDICAL & OSTEOPATH.	*	.	*	*	X	*	.	.			.	X
81	DENTAL HYGIENISTS	.	.	*	*	X	*	X	*			.	.
83	RADIOLOGIC TECHNOLOG. & TECHNIC.	*	.	*	*	X	*	.	*			.	.
OCCUPATIONS THAT WERE NOT GROUPED BECAUSE OF LACK OF DATA TO DO SO													
103	ATMO,EARTH,MAR,& SPACE TEACH,COL	-	-	-	-	-	-	-	-			-	-
104	BIOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
105	CHEMISTRY TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
110	PHYSICS TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
111	ENGINEERING TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
112	MATHEMATICS TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
114	PSYCHOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
115	BUSINESS & COMMERCE TEACHERS,COL	-	-	-	-	-	-	-	-			-	-
116	ECONOMICS TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
120	HISTORY TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
121	SOCIOLOGY TEACHERS, TEACHERS	-	-	-	-	-	-	-	-			-	-
122	SOCIAL SCIENCE TEACHERS, NEC,COL	-	-	-	-	-	-	-	-			-	-
125	EDUCATION TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
126	ENGLISH TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
130	FOREIGN LANGUAGE TEACHERS,COL	-	-	-	-	-	-	-	-			-	-
131	HOME ECONOMICS TEACHERS, COL	-	-	-	-	-	-	-	-			-	-
132	LAW TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
133	THEOLOGY TEACHERS, COLLEGE	-	-	-	-	-	-	-	-			-	-
134	TRADE,IND., & TECH. TEACHERS,COL	-	-	-	-	-	-	-	-			-	-
170	FLIGHT ENGINEERS	-	-	-	-	-	-	-	-			-	-
383	TELEGRAPH MESSENGERS	-	-	-	-	-	-	-	-			-	-
475	DATA PROCESSING MACH. REPAIRMEN	-	-	-	-	-	-	-	-			-	-
512	PAPERHANGERS	-	-	-	-	-	-	-	-			-	-
605	CHAINMEN,RODMEN,& AXMEN;SURVEY.	-	-	-	-	-	-	-	-			-	-
634	MEAT WRAPPERS, RETAIL TRADE	-	-	-	-	-	-	-	-			-	-
770	WAREHOUSEMEN, NEC	-	-	-	-	-	-	-	-			-	-

JOB ATTRIBUTE:	OTHER ABILITIES					BIPOLAR INTERESTS					SOURCES OF INFORMATION								
	CLERICAL	MEMORY	IFTCOOR	EXERTION	STRENGTH	IDATA	ISCIENCE	ICREATE	IMACH	IPRODUCT	WRITTEN	QUANT	PICTORAL	PATTERNS	BEHAVIOR	EVENTS	VERBALP	F	SJC
OCCUPATIONS NOT GROUPED -- CONT.																			
823 FARM LABORERS,UNPAID FAM. WORKER	-		-		-	-	-	-	-	-								-	-
923 HEALTH TRAINEES	-		-		-	-	-	-	-	-								-	-
952 SCHOOL MONITORS	-		-		-	-	-	-	-	-								-	-
954 WELFARE SERVICE AIDES	-		-		-	-	-	-	-	-								-	-
963 MARSHALS & CONSTABLES	-		-		-	-	-	-	-	-								-	-

Appendix G

Responsibility, Vigilance, and Education and Training in Different Occupations

Key

Numbers next to the group numbers are percentiles for the group average on the variable in question.

· A low score

* A moderate score

X A high score

- Data are not available.

Note

Data for the PAQ Variables have been omitted pending permission from PAQ Services to release these data (per our agreement in purchasing their proprietary data).

		RESPONSIBILITY				VIGILANCE			EDUCATION AND TRAINING						
JOB ATTRIBUTE:		RESPONSIBILITY FOR SAFETY OF OTHERS	RESPONSIBILITY FOR SUPERVISION	RESPONSIBILITY FOR GENERAL WORK CONDITIONS	CRITICALITY	RECOGNITION OF VIGILANCE	VIGILANCE FREQUENCY	VIGILANCE CHANGING	EDUCATION	GED	TRAINING	SVP	EXPERIENCE	UPDATE	LICENSE
CORRELATION WITH:	ACADEMIC ABILITIES	-.24	.06	.58	.48	.20	.06	.05	.80	.91	.42	.81	.54	.63	.25
	MOTOR ABILITIES	.19	-.09	-.35	-.33	-.04	-.01	-.09	-.26	-.06	-.02	.09	-.15	-.24	-.05
	DEALING WITH PEOPLE	-.12	.07	.47	.43	.11	.00	.11	.49	.38	.14	.27	.25	.49	.36
GROUP 1										2		5			
626	HEATERS, METAL									•		*			
753	FREIGHT & MATERIAL HANDLERS									•		•			
760	LONGSHOREMEN & STEVEDORES									•		•			
762	STOCK HANDLERS									•		•			
901	CHMBRMDS. & MDS.,EXC. PRI. HSHD.									•		•			
902	CLEANERS & CHARWOMEN									•		•			
913	DISHWASHERS									•		•			
963	LAUNDRESSES, PRIVATE HOUSEHOLD									•		•			
GROUP 2										18		17			
443	FURNITURE & WOOD FINISHERS									*		*			
705	DELIVERYMEN & ROUTEMEN									•		*			
953	USHERS,RECREATION & AMUSEMENT									*		*			
960	CROSSING GUARDS & BRIDGE TENDERS									*		*			
984	MAIDS & SERVANTS,PRIV. HOUSEHOLD									•		•			
GROUP 3										11		8			
711	PARKING ATTENDANTS									*		*			
911	BUSBOYS									•		•			
933	ATTENDANTS, PERSONAL SERVICE,NEC									*		*			
934	BAGGAGE PORTERS & BELLHOPS									•		*			
941	BOOTBLACKS									•		•			
943	ELEVATOR OPERATORS									•		*			
980	CHILD CARE WORKERS,PRI. HOUSEHD.									*		*			
GROUP 4										16		19			
344	DUPLICATING MACHINE OPERATORS									*		*			
355	OFFICE MACHINE OPERATORS, NEC									*		*			

392	WEIGHERS	•	•
401	AUTOMOBILE ACCESSORIES INSTALLER	*	*
402	BAKERS	*	*
403	BLACKSMITHS	*	X
405	BOOKBINDERS	•	*
412	BULLDOZER OPERATORS	*	*
421	CEMENT & CONCRETE FINISHERS	*	X
424	CRANEMEN, DERRICKMEN, & HOISTMEN	*	*
435	ENGRAVERS, EXC. PHOTOENGRAVERS	*	*
436	EXCAV,GRAD,& RD MACH OP; EX BDZR	*	*
442	FORGEMEN & HAMMERMEN	*	*
445	GLAZIERS	*	*
446	HT. TREATERS,ANNEAL.,& TEMPERERS	*	*
450	INSP.,SCALERS,& GRAD.;LOG & LUM.	*	*
455	LOCOMOTIVE ENGINEERS	*	*
483	LOOM FIXERS	*	X
495	NOT SPEC. MECHANICS & REPAIRMEN	•	*
501	MILLERS; GRAIN, FLOUR, & FEED	•	*
503	MOLDERS, METAL	*	*
530	PRSSMN. & PLATE PRNTRS.,PRINTING	*	*
533	ROLLERS & FINISHERS, METAL	*	*
546	STONE CUTTERS & STONE CARVERS	*	*
560	TILE SETTERS	*	*
563	UPHOLSTERERS	•	*
601	ASBESTOS & INSULATION WORKERS	•	*
602	ASSEMBLERS	•	*
603	BLASTERS & POWDERMEN	*	*
604	BOTTLING & CANNING OPERATIVES	•	•
610	CHECKERS,EXAM.,& INSPECT.;MANUF.	*	*
611	CLOTHING IRONERS & PRESSERS	•	•
612	CUTTING OPERATIVES, NEC	•	*
620	DYERS	*	*
621	FILERS,POLISH.,SANDERS,& BUFFERS	•	*
622	FURNACEMEN,SMELTERMEN,& POURERS	*	*
624	GRADERS & SORTERS, MANUFACTURING	•	*
625	PROD GRAD & PACK,EXC FACT & FARM	•	*
630	LAUN. & DRY CLEAN. OPERATIV.,NEC	•	*
633	MEAT CUTTERS & BUTCHERS,MANUF.	•	•
636	MILLINERS	•	*
640	MINE OPERATIVES,NEC	•	*
641	MIXING OPERATIVES	•	*
642	OILERS & GREASERS, EXC. AUTO	•	*
643	PACKERS & WRAP.,EX. MEAT & PROD.	•	•
644	PAINTERS, MANUFACTURED ARTICLES	•	*
650	DRILL PRESS OPERATIVES	*	*
651	GRINDING MACHINE OPERATIVES	*	*
652	LATHE & MILLING MACH. OPERATIVES	*	*
653	PRECISION MACH. OPERATIVES, NEC	*	*
656	PUNCH & STAMP. PRESS OPERATIVES	•	*
660	RIVETERS & FASTENERS	•	*
662	SAWYERS	*	*
664	SHOEMAKING MACHINE OPERATIVES	•	•
665	SOLDERERS	•	*
666	STATIONARY FIREMEN	*	*
670	CARDING,LAPPING, & COMBING OPER.	•	*

JOB ATTRIBUTE:	RESPONSIBILITY				VIGILANCE			EDUCATION AND TRAINING					
	RESPSAF	RESPMAT	RESPGEN	CRITICAL	RECOGNIT	VIGINFRE	VIGCHANG	EDUCATN	GED	TRAINING	SVP	SXPRNCE	UPDATE	LICENSE
GROUP 4 -- CONT.														
672 SPINNERS,TWISTERS,& WINDERS									•		*			
673 WEAVERS									*		*			
674 TEXTILE OPERATIVES,NEC									•		*			
680 WELDERS & FLAME-CUTTERS									*		*			
681 WINDING OPERATIVES, NEC									•		*			
690 MACHINE OPERATIVES, MISC. SPEC.									•		*			
692 MACHINE OPERATIVES,NOT SPECIFIED									•		*			
694 MISCELLANEOUS OPERATIVES									•		*			
695 NOT SPECIFIED OPERATIVES									•		*			
706 FORK LIFT & TOW MOTOR OPERATIVES									•		*			
710 MTRMEN.;MINE,FACT.,LOG. CAMP,ETC									*		*			
713 RAILROAD SWITCHMEN									*		*			
715 TRUCK DRIVERS									*		*			
750 CARPENTERS' HELPERS									•		*			
751 CONSTR. LABORERS,EX. CARP. HELP.									•		*			
752 FISHERMEN & OYSTERMEN									•		*			
755 GARDENERS & GRNDSKPRS.,EXC.FARM									*		*			
761 LUMBERMEN,RAFTSMEN,& WOODCHOP.									•		*			
763 TEAMSTERS									*		*			
764 VEHICLE WASHERS & EQ. CLEANERS									•		•			
780 MISC. LABORERS									•		•			
785 NOT SPECIFIED LABORERS									•		•			
822 FARM LABORERS, WAGE WORKERS									•		*			
903 JANITORS & SEXTONS									•		•			
GROUP 5									19		17			
333 MESSENGERS & OFFICE BOYS									•		•			
623 GARAGE WORKERS & GAS STAT. ATT.									•		*			
701 BOATMEN & CANALMEN									*		*			
712 RAILROAD BRAKEMEN									*		*			
714 TAXICAB DRIVERS & CHAUFFEURS									*		*			
740 ANIMAL CARETAKERS, EXC. FARM									*		*			
754 GARBAGE COLLECTORS									•		*			
916 FD SERV WORKERS,NEC EX PRI HSHD									*		*			
GROUP 6									16		6			

914	FOOD COUNTER & FOUNTAIN WORKERS	*	*
942	CHILD CARE WORKERS,EX. PR. HSHD.	*	*
GROUP 7		22	32
361	POSTAL CLERKS	*	*
444	FURRIERS	*	*
453	JEWELERS & WATCHMAKERS	*	*
542	SHOE REPAIRMEN	*	*
631	MEAT CUTTERS & BUTCHERS,EXC MAN.	*	*
663	SEWERS & STITCHERS	*	*
671	KNITTERS,LOOPERS,& TOPPERS	*	*
GROUP 8 -- NO OCCUPATIONS IN THIS GROUP			
GROUP 9 -- NO OCCUPATIONS IN THIS GROUP			
GROUP 10		60	37
362	PROOFREADERS	*	*
GROUP 11		35	27
323	EXPEDITERS & PRODUCTION CONTROL.	*	*
330	LIBRARY ATTENDANTS & ASSISTANTS	*	*
332	MAIL HANDLERS,EXCEPT POST OFFICE	*	*
344	STOCK CLERKS & STOREKEEPERS	*	*
395	NOT SPECIFIED CLERICAL WORKERS	*	*
910	BARTENDERS	*	*
981	COOKS, PRIVATE HOUSEHOLD	*	X
GROUP 12		38	31
175	ACTORS	*	*
226	RAILROAD CONDUCTORS	*	X
264	HUCKSTERS & PEDDLERS	*	*
265	NEWSBOYS	*	*
313	COLLECTORS, BILL & ACCOUNT	*	*
314	COUNTER CLERKS, EXCEPT FOOD	*	*
315	DISPATCHERS & STARTERS, VEHICLE	*	*
320	ENUMERATORS & INTERVIEWERS	*	*
364	RECEPTIONISTS	*	*
932	ATTENDANTS, RECREAT. & AMUSEMENT	*	*
940	BOARDING & LODGING HOUSE KEEPERS	*	*
950	HOUSEKEEPERS,EXC. PRIV. HSEHLD.	*	X
962	GUARDS & WATCHMEN	*	*
965	SHERIFFS & BAILIFFS	*	X
982	HOUSEKEEPERS, PRIVATE HOUSEHOLD	*	*

JOB ATTRIBUTE:	RESPONSIBILITY				VIGILANCE			EDUCATION AND TRAINING						
	RESPSAF	RESPMAT	RESPGEN	CRITICAL	RECOGNIT	VIGINFRE	VIGCHANG	EDUCATN	GED	TPAINING	SVP	EXPRNCE	UPDATE	LICENSE
GROUP 13									41		46			
150 AGRIC. & BIO. TECH., EXC. HEALTH									*		*			
303 BILLING CLERKS									*		*			
342 CALCULATING MACHINE OPERATORS									*		*			
343 COMPUTER & PERIPH. EQUIP. OPER.									*		*			
345 KEY PUNCH OPERATORS									*		*			
350 TABULATING MACHINE OPERATORS									*		*			
374 SHIPPING & RECEIVING CLERKS									*		*			
375 STATISTICAL CLERKS									*		*			
410 BRICKMASONS & STONEMASONS									*		X			
415 CARPENTERS									*		X			
422 COMPOSITORS & TYPESETTERS									*		X			
440 FLOOR LAYERS, EXC. TILE SETTERS									*		*			
452 INSPECTORS, NEC									*		*			
454 JOB & DIE SETTERS, METAL									*		X			
456 LOCOMOTIVE FIREMEN									*		*			
470 AIR CON.,HT.,& REF. MECH. & REP.									*		X			
472 AUTOMOBILE BODY REPAIRMEN									*		*			
473 AUTOMOBILE MECHANICS									*		X			
480 FARM IMPLEMENT MECH. & REPAIRMEN									*		X			
482 HSEHLD APPL. & ACC. INST. & MECH									*		X			
486 RLRD. & CAR SHOP MECH. & REPRMN.									*		X			
492 MISC. MECHANICS & REPAIRMEN									*		*			
506 OPTIC., & LENS GRIND. & POLISH.									*		*			
510 PAINTERS,CONSTRUCTION & MAINTEN.									*		X			
516 PIANO & ORGAN TUNERS & REPAIRMEN									*		X			
520 PLASTERERS									*		X			
521 PLASTERER APPRENTICES									*		X			
531 PRESSMAN APPRENTICES									*		X			
535 SHEETMETAL WORKERS & TINSMITHS									*		*			
545 STATIONARY ENGINEERS									*		*			
550 STRUCTURAL METAL CRAFTSMEN									*		X			
575 CRAFTSMEN & KINDRED WORKERS, NEC									*		X			
614 DRILLERS, EARTH									*		*			
635 METAL PLATERS									*		*			
645 PHOTOGRAPHIC PROCESS WORKERS									*		*			
801 FARMERS(OWNERS & TENANTS)									*		X			

GROUP 14		49	51
180	ATHLETES & KINDRED WORKERS	*	X
325	FILE CLERKS	*	*
331	MAIL CARRIERS, POST OFFICE	*	*
394	MISCELLANEOUS CLERICAL WORKERS	*	*
404	BOILERMAKERS	*	X
433	ELECT. POWER LINEMEN & CABLEMEN	*	X
434	ELECTROTYPERS & STEREOTYPERS	*	X
505	MOTION PICTURE PROJECTIONISTS	*	X
522	PLUMBERS & PIPE FITTERS	*	X
525	POWER STATION OPERATORS	*	X
534	ROOFERS & SLATERS	*	X
552	TELEPHONE INSTALLERS & REPAIRMEN	*	X
554	TELEPHONE LINEMEN & SPLICERS	*	X
661	SAILORS & DECKHANDS	*	*
824	FARM SERVICE LABORERS,SELF-EMPL.	*	*
912	COOKS, EXC. PRIV. HOUSEHOLD	*	X
921	DENTAL ASSISTANTS	*	*
922	HEALTH AIDES, EXC. NURSING	*	*
961	FIREMEN, FIRE PROTECTION	*	X
GROUP 15		52	38
71	PODIATRISTS	X	X
194	WRITERS,ARTISTS,& ENTERTAIN.,NEC	*	X
262	DEMONSTRATORS	*	*
283	SALES CLERKS, RETAIL TRADE	*	*
284	SALESMEN, RETAIL TRADE	*	*
384	TELEGRAPH OPERATORS	*	*
385	TELEPHONE OPERATORS	*	*
44[illegible]	FOREMEN, NEC	*	X
703	BUS DRIVERS	*	*
821	FARM FOREMEN	*	X
915	WAITERS	*	*
925	NURS. AIDES,ORDERLIES,& ATTEND.	*	*
926	PRACTICAL NURSES	*	*
GROUP 16		53	61
190	PAINTERS & SCULPTORS	*	X
391	TYPISTS	*	*
413	CABINETMAKERS	*	X
423	PRINT. TRADES APPR.,EX. PRESSMEN	*	X
426	DENTAL LABORATORY TECHNICIANS	*	*
431	ELECTRICIAN APPRENTICES	*	X
471	AIRCRAFT MECHANICS & REPAIRMEN	*	X
474	AUTOMOBILE MECHANICS APPRENTICES	*	X
481	HEAVY EQUIP. MECH., INCL. DIESEL	*	X
484	OFFICE MACHINE MECH. & REPAIRMEN	*	X
485	RADIO & TV MECHANICS & REPAIRMEN	*	X
504	MOLDER APPRENTICES	*	X
511	PAINTER APPRENTICES	*	X

JOB ATTRIBUTE:	RESPONSIBILITY				VIGILANCE			EDUCATION AND TRAINING					
	RESPSAF	RESPMAT	RESPGEN	CRITICAL	RECOGNIT	VIGINFRE	VIGCHANG	EDUCATN	GED	TRAINING	SVP	EXPRNCE	UPDATE	LICENSE
GROUP 16 -- CONT.														
514 PAT. & MODEL MAKERS, EXC. PAPER									*		X			
515 PHOTOENGRAVERS & LITHOGRAPHERS									*		X			
540 SHIPFITTERS									*		X			
543 SIGN PAINTERS & LETTERERS									*		X			
561 TOOL & DIE MAKERS									*		X			
571 SPECIFIED CRAFT APPRENTICES, NEC									*		X			
572 NOT SPECIFIED APPRENTICES									*		X			
613 DRESSMAKERS & SMSTRSS.,EX. FACT.									*		X			
GROUP 17									50		62			
376 STENOGRAPHERS									*		*			
411 BRICKMASONS & STONEMAS.,APPRENT.									*		X			
430 ELECTRICIANS									*		X			
615 DRY WALL INSTALLERS & LATHERS									*		X			
GROUP 18									45		47			
311 CLERICAL ASSIST., SOCIAL WELFARE									*		*			
924 LAY MIDWIVES									*		X			
935 BARBERS									*		X			
944 HAIRDRESSERS & COSMETOLOGISTS									*		*			
945 PERSONAL SERVICE APPRENTICES									*		X			
GROUP 19									96		92			
92 POLITICAL SCIENTISTS									X		X			
172 TOOL PROGRAMMERS, NUM. CONTROL									X		X			
181 AUTHORS									X		X			
GROUP 20									74		59			
32 LIBRARIANS									X		X			
213 CONSTR. INSPECT., PUBLIC ADMIN.									*		X			
215 INSPECT., EXC. CONSTR., PUB. AD.									*		X			

321	ESTIMATORS & INVESTIGATORS, NEC	*	X
GROUP 21		74	60
24	FARM MANAGEMENT ADVISORS	X	X
25	FORESTERS & CONSERVATIONISTS	*	X
74	DIETITIANS	X	X
90	RELIGIOUS WORKERS, NEC	*	X
100	SOCIAL WORKERS	X	X
101	RECREATION WORKERS	X	X
135	MISC. TEACHERS, COLLEGE	X	X
142	ELEMENTARY SCHOOL TEACHERS	X	X
193	RADIO & TELEVISION ANNOUNCERS	X	X
205	BUYERS, WHOLESALE & RETAIL TRADE	*	X
211	FUNERAL DIRECTORS	*	X
216	MANAGERS & SUPERS., BUILDING	*	X
220	OFFICE MANAGERS, NEC	*	X
223	OFFIC. OF LODGES, SOC., & UNIONS	X	X
224	POSTMASTERS & MAIL SUPERINTEND.	*	X
230	REST., CAFETERIA, & BAR MANAGERS	*	X
231	SALES MAN. & DEPT. HDS.,RET. TR.	*	X
233	SALES MANAGERS,EXC. RETAIL TRADE	*	X
260	ADVERTISING AGENTS & SALESMEN	*	X
261	AUCTIONEERS	*	X
281	SALES REP., MANUFACT. INDUSTRIES	*	*
282	SALES REP., WHOLESALE TRADE	*	*
285	SALESMEN OF SERV. & CONSTRUCTION	*	*
312	CLERICAL SUPERVISORS, NEC	*	X
326	INS. ADJUST.,EXAMIN.,& INVESTIG.	X	X
334	METER READERS, UTILITIES	*	*
390	TICKET, STATION, & EXPR. AGENTS	*	X
802	FARM MANAGERS	X	X
931	AIRLINE STEWARDESSES	*	*
964	POLICEMEN & DETECTIVES	*	X
GROUP 22		73	52
151	CHEMICAL TECHNICIANS	*	X
161	SURVEYORS	X	X
162	ENG. & SCIENCE TECHNICIANS, NEC	*	X
305	BOOKKEEPERS	*	*
GROUP 23		71	62
154	INDUSTRIAL ENG. TECHNICIANS	*	X
164	AIR TRAFFIC CONTROLLERS	*	X
173	TECH. EX. HEALTH,ENG.,& SCI.,NEC	*	X
182	DANCERS	X	X
191	PHOTOGRAPHERS	*	X
360	PAYROLL & TIMEKEEPING CLERKS	*	*

JOB ATTRIBUTE:	RESPONSIBILITY				VIGILANCE			EDUCATION AND TRAINING					
	RESPSAF	RESPMAT	RESPGEN	CRITICAL	RECOGNIT	VIGINFRE	VIGCHANG	EDUCATN	GED	TRAINING	SVP	EXPRNCE	UPDATE	LICENSE
GROUP 24									71		52			
26 HOME MANAGEMENT ADVISORS									X		X			
65 HEALTH TECHNOL. & TECHNIC., NEC									*		X			
123 ART, DRAMA, & MUSIC TEACHERS,COL									X		X			
141 ADULT EDUCATION TEACHERS,EXC.COL									*		X			
145 TEACHERS, EXC. COLLEGE, NEC									*		X			
221 OFFICERS, PILOTS, & PURSERS;SHIP									*		X			
310 CASHIERS									*		*			
382 TEACHER AIDES, EXC. SCHOOL MON.									*		*			
704 COND. & MTRMEN.,URB. RAIL TRANS.									*		*			
GROUP 25									61		72			
153 ELECTRIC. & ELECTRON. ENG. TECH.									*		X			
155 MECHANICAL ENG. TECHNICIANS									*		X			
165 EMBALMERS									*		X			
171 RADIO OPERATORS									*		X			
341 BOOKKEEPING & BILLING MACH. OPR.									*		*			
416 CARPENTER APPRENTICES									*		X			
420 CARPET INSTALLERS									*		X			
425 DECORATORS & WINDOW DRESSERS									*		X			
461 MACHINISTS									*		X			
462 MACHINIST APPRENTICES									*		X			
491 MECHANIC, EXC. AUTO. APPRENTICES									*		X			
523 PLUMBER & PIPE FITTER APPRENT.									*		X			
536 SHEETMETAL APPRENTICES									*		X			
551 TAILORS									*		X			
562 TOOL & DIE MAKER APPRENTICES									*		X			
GROUP 26									73		85			
183 DESIGNERS									*		X			
502 MILLWRIGHTS									*		X			
GROUP 27									71		57			
61 CHIROPRACTORS									X		X			
84 THERAPY ASSISTANTS									*		*			

124	COACHES & PHYS. ED. TEACHERS,COL	*	X
143	PREKIND. & KINDERGARTEN TEACHERS	X	X
301	BANK TELLERS	*	*
370	SECRETARIES, LEGAL	*	X
371	SECRETARIES, MEDICAL	*	X
372	SECRETARIES, NEC	*	X
		95	88
GROUP 28			
3	COMPUTER PROGRAMMERS	X	X
5	COMPUTER SPECIALISTS, N.E.C.	X	X
34	ACTUARIES	X	X
35	MATHEMATICIANS	X	X
36	STATISTICIANS	X	X
43	ATMOSPHERIC & SPACE SCIENTISTS	X	X
94	SOCIOLOGISTS	X	X
96	SOCIAL SCIENTISTS, NEC	X	X
		89	88
GROUP 29			
1	ACCOUNTANTS	X	X
55	OPERAT. & SYST. RESEARC. & ANAL.	X	X
91	ECONOMISTS	X	X
		90	87
GROUP 30			
4	COMPUTER SYSTEMS ANALYSTS	X	X
30	JUDGES	X	X
31	LAWYERS	X	X
56	PERSONNEL & LABOR REL. WORKERS	X	X
82	HEALTH REC. TECHNOL. & TECHNIC.	X	X
86	CLERGYMEN	X	X
93	PSYCHOLOGISTS	X	X
102	AGRICULTURE TEACHERS, COLLEGE	X	X
140	TEACHERS, COL., SUBJ. NOT SPEC.	X	X
174	VOCATIONAL AND EDUCAT COUNSELORS	X	X
184	EDITORS & REPORTERS	X	X
192	PUB. REL. MEN & PUBLICITY WRITER	X	X
195	RESEARCH WORKERS, NOT SPECIFIED	X	X
201	ASS.,CON.,& TREAS.,LOC. PUB. AD.	X	X
202	BANK OFFICERS & FINANC. MANAGERS	X	X
203	BUYERS & SHIPPERS, FARM PRODUCTS	X	X
210	CREDIT MEN	X	X
212	HEALTH ADMINISTRATORS	X	X
222	OFFICIALS & ADM., PUB. ADM., NEC	*	X
225	PURCHASING AGENTS & BUYERS, NEC	X	X
235	SCHOOL ADMINISTRATORS, COLLEGE	X	X
240	SCHOOL ADMINISTRAT.,ELEM. & SEC.	X	X
245	MANAGERS AND ADMINISTRATORS, NEC	X	X
265	INS. AGENTS,BROKERS,& UNDERWRIT.	*	X
270	REAL ESTATE AGENTS & BROKERS	X	X

JOB ATTRIBUTE:	RESPONSIBILITY				VIGILANCE			EDUCATION AND TRAINING					
	RESPSAF	RESPMAT	RESPGEN	CRITICAL	RECOGNIT	VIGINFRE	VIGCHANG	EDUCATN	GED	TRAINING	SVP	EXPRNCE	UPDATE	LICENSE
GROUP 30 -- CONT.														
271 STOCK & BOND SALESMEN									X		X			
363 REAL ESTATE APPRAISERS									X		X			
GROUP 31									92		89			
6 AERONAUT. & ASTRONAUT. ENGINEERS									X		X			
10 CHEMICAL ENGINEERS									X		X			
11 CIVIL ENGINEERS									X		X			
156 MATHEMATICAL TECHNICIANS									X		X			
GROUP 32									93		92			
2 ARCHITECTS									X		X			
12 ELECTRICAL & ELECTRONIC ENGINRS.									X		X			
13 INDUSTRIAL ENGINEERS									X		X			
14 MECHANICAL ENGINEERS									X		X			
20 MINING ENGINEERS									X		X			
21 PETROLEUM ENGINEERS									X		X			
23 ENGINEERS, NEC									X		X			
33 ARCHIVISTS AND CURATORS									X		X			
45 CHEMISTS									X		X			
51 GEOLOGISTS									X		X			
53 PHYSICISTS AND ASTRONOMERS									X		X			
95 URBAN & REGIONAL PLANNERS									X		X			
GROUP 33									82		85			
22 SALES ENGINEERS									X		X			
75 REGISTERED NURSES									X		X			
76 THERAPISTS									X		X			
113 HEALTH SPECIALITIES TEACHERS,COL									X		X			
144 SECONDARY SCHOOL TEACHERS									X		X			
GROUP 34									94		87			
15 METALLURG. & MATERIALS ENGINRS.									X		X			

42	AGRICULTURAL SCIENTISTS	X	X
44	BIOLOGICAL SCIENTISTS	X	X
52	MARINE SCIENTISTS	X	X
54	LIFE & PHYSICAL SCIENTISTS, NEC	X	X
64	PHARMACISTS	X	X
72	VETERINARIANS	X	X
80	CLIN. LAB. TECHNOLOG. & TECHNIC.	X	X
152	DRAFTSMEN	X	X
GROUP 35		89	83
73	HEALTH PRACTITIONERS, NEC	X	X
163	AIRPLANE PILOTS	X	X
165	MUSICIANS & COMPOSERS	X	X
GROUP 36		92	82
62	DENTISTS	X	X
63	OPTOMETRISTS	X	X
65	PHYSICIANS, MEDICAL & OSTEOPATH.	X	X
81	DENTAL HYGIENISTS	X	X
83	RADIOLOGIC TECHNOLOG. & TECHNIC.	X	X
OCCUPATIONS THAT WERE NOT GROUPED BECAUSE OF LACK OF DATA TO DO SO			
103	ATMO,EARTH,MAR,& SPACE TEACH,COL	-	-
104	BIOLOGY TEACHERS, COLLEGE	-	-
105	CHEMISTRY TEACHERS, COLLEGE	-	-
110	PHYSICS TEACHERS, COLLEGE	-	-
111	ENGINEERING TEACHERS, COLLEGE	-	-
112	MATHEMATICS TEACHERS, COLLEGE	-	-
114	PSYCHOLOGY TEACHERS, COLLEGE	-	-
115	BUSINESS & COMMERCE TEACHERS,COL	-	-
116	ECONOMICS TEACHERS, COLLEGE	-	-
120	HISTORY TEACHERS, COLLEGE	-	-
121	SOCIOLOGY TEACHERS, TEACHERS	-	-
122	SOCIAL SCIENCE TEACHERS, NEC,COL	-	-
125	EDUCATION TEACHERS, COLLEGE	-	-
126	ENGLISH TEACHERS, COLLEGE	-	-
130	FOREIGN LANGUAGE TEACHERS,COL	-	-
131	HOME ECONOMICS TEACHERS, COL	-	-
132	LAW TEACHERS, COLLEGE	-	-
133	THEOLOGY TEACHERS, COLLEGE	-	-
134	TRADE,IND., & TECH. TEACHERS,COL	-	-
170	FLIGHT ENGINEERS	-	-
383	TELEGRAPH MESSENGERS	-	-
475	DATA PROCESSING MACH. REPAIRMEN	-	-
512	PAPERHANGERS	-	-
605	CHAINMEN,RODMEN,& AXMEN;SURVEY.	-	-
634	MEAT WRAPPERS, RETAIL TRADE	-	-
770	WAREHOUSEMEN, NEC	-	-

JOB ATTRIBUTE:	RESPONSIBILITY				VIGILANCE			EDUCATION AND TRAINING						
	RESPSAF	RESPMAT	RESPGEN	CRITICAL	RECOGNIT	VIGINFRE	VIGCHANG	EDUCATN	GED	TRAINING	SVP	EXPRNCE	UPDATE	LICENSE
OCCUPATIONS NOT GROUPED -- CONT.														
823 FARM LABORERS,UNPAID FAM. WORKER									-		-			
923 HEALTH TRAINEES									-		-			
952 SCHOOL MONITORS									-		-			
954 WELFARE SERVICE AIDES									-		-			
963 MARSHALS & CONSTABLES									-		-			

Appendix H

Working Conditions in Different Occupations

Key

Numbers next to the group numbers are percentiles for the group average on the variable in question.

· A low score

* A moderate score

X A high score

- Data are not available.

Note

Data for the PAQ variables have been omitted pending permission from PAQ Services to release these data (per our agreement in purchasing their proprietary data).

JOB ATTRIBUTE:		VARCH	REPCON	MVC	STS	WORKPACE	REPETIT	CYCLED	SETPROC	TIMEPRES	STRUCTUR	RECSUPER	SOCCONT	DISTRACT	CIVICOB	FRUST	STRAINED	SACRIFIC	CONFLICT	PUS
CORRELATION WITH:	ACADEMIC ABILITIES	.36	-.71	.39	-.14	-.36	-.53	-.02	-.27	.38	.70	.61	.18	.54	.46	.55	.49	.45	.57	.03
	MOTOR ABILITIES	-.01	-.01	.28	.58	.06	.09	-.10	.16	-.09	-.29	-.34	-.05	-.29	-.34	-.34	-.39	-.29	-.36	-.01
	DEALING WITH PEOPLE	.32	-.46	-.26	.51	-.20	-.30	.07	-.30	.30	.50	.56	.29	.58	.59	.61	.66	.54	.57	.12
GROUP 1		47	92	21	30															85
626	HEATERS, METAL	.	*	*	*															.
753	FREIGHT & MATERIAL HANDLERS	.	X	.	*															.
760	LONGSHOREMEN & STEVEDORES	.	X	.	.															.
762	STOCK HANDLERS	*	X	.	*															.
901	CHMBRMDS. & MDS.,EXC. PRI. HSHD.	X	X	.	.															.
902	CLEANERS & CHARWOMEN	*	X	.	.															.
913	DISHWASHERS	.	X	.	.															.
983	LAUNDRESSES, PRIVATE HOUSEHOLD	.	X	.	.															.
GROUP 2		58	70	21	31															0
443	FURNITURE & WOOD FINISHERS	*	*	.	*															.
705	DELIVERYMEN & ROUTEMEN	.	*	.	.															.
953	USHERS,RECREATION & AMUSEMENT	.	*	.	.															.
960	CROSSING GUARDS & BRIDGE TENDERS	*	*	*	*															.
934	MAIDS & SERVANTS,PRIV. HOUSEHOLD	X	.	.	.															.
GROUP 3		55	79	20	21															84
711	PARKING ATTENDANTS	.	*	.	.															.
911	BUSBOYS	.	X	.	.															.
933	ATTENDANTS, PERSONAL SERVICE,NEC	*	*	.	.															.
934	BAGGAGE PORTERS & BELLHOPS	*	*	.	.															.
941	BOOTBLACKS	.	X	.	.															.
943	ELEVATOR OPERATORS	.	*	*	.															.
980	CHILD CARE WORKERS,PRI. HOUSEHD.	X	.	.	.															.
GROUP 4		34	83	40	54															84
344	DUPLICATING MACHINE OPERATORS	.	*	*	*															.
355	OFFICE MACHINE OPERATORS, NEC	.	*	*	*															.

WORKING CONDITIONS

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392	WEIGHERS	.	X	.	X
401	AUTOMOBILE ACCESSORIES INSTALLER	*	.	*	X
402	BAKERS	.	*	*	X
403	BLACKSMITHS	*	.	X	X
405	BOOKBINDERS	.	X	.	X
412	BULLDOZER OPERATORS	.	X	.	*
421	CEMENT & CONCRETE FINISHERS	*	*	*	X
424	CRANEMEN, DERRICKMEN, & HOISTMEN	.	X	.	X
435	ENGRAVERS, EXC. PHOTOENGRAVERS	.	*	X	X
436	EXCAV,GRAD,& RD MACH OP; EX BDZR	.	*	*	X
442	FORGEMEN & HAMMERMEN	.	*	*	X
445	GLAZIERS	*	*	*	X
446	HT. TREATERS,ANNEAL.,& TEMPERERS	.	*	*	X
450	INSP.,SCALERS,& GRAD.;LOG & LUM.	.	*	*	*
455	LOCOMOTIVE ENGINEERS	.	.	X	.
483	LOOM FIXERS	.	.	X	X
495	NOT SPEC. MECHANICS & REPAIRMEN	*	*	*	*
501	MILLERS; GRAIN, FLOUR, & FEED	.	*	.	*
503	MOLDERS, METAL	.	*	*	X
530	PRSSMN. & PLATE PRNTRS.,PRINTING	.	*	*	X
533	ROLLERS & FINISHERS, METAL	.	*	*	X
546	STONE CUTTERS & STONE CARVERS	.	*	X	X
560	TILE SETTERS	.	*	*	X
563	UPHOLSTERERS	.	X	.	X
601	ASBESTOS & INSULATION WORKERS	.	*	*	*
602	ASSEMBLERS	.	X	*	X
603	BLASTERS & POWDERMEN	.	*	*	X
604	BOTTLING & CANNING OPERATIVES	.	X	.	*
610	CHECKERS,EXAM.,& INSPECT.;MANUF.	.	*	*	X
611	CLOTHING IRONERS & PRESSERS	.	X	.	*
612	CUTTING OPERATIVES, NEC	.	X	.	X
620	DYERS	.	X	*	X
621	FILERS,POLISH.,SANDERS,& BUFFERS	.	X	*	X
622	FURNACEMEN,SMELTERMEN,& POURERS	.	X	*	X
624	GRADERS & SORTERS, MANUFACTURING	.	X	.	*
625	PROD GRAD & PACK,EXC FACT & FARM	.	*	.	*
630	LAUN. & DRY CLEAN. OPERATIV.,NEC	.	X	.	*
633	MEAT CUTTERS & BUTCHERS,MANUF.	.	X	.	*
636	MILLINERS	.	*	.	*
640	MINE OPERATIVES,NEC	.	X	*	X
641	MIXING OPERATIVES	.	*	*	X
642	OILERS & GREASERS, EXC. AUTO	.	X	.	*
643	PACKERS & WRAP.,EX. MEAT & PROD.	.	X	.	*
644	PAINTERS, MANUFACTURED ARTICLES	.	X	.	X
650	DRILL PRESS OPERATIVES	.	*	*	X
651	GRINDING MACHINE OPERATIVES	.	*	*	X
652	LATHE & MILLING MACH. OPERATIVES	.	*	*	X
653	PRECISION MACH. OPERATIVES, NEC	.	*	X	X
656	PUNCH & STAMP. PRESS OPERATIVES	.	X	*	X
660	RIVETERS & FASTENERS	.	X	.	*
662	SAWYERS	.	X	*	X
664	SHOEMAKING MACHINE OPERATIVES	.	X	.	*
665	SOLDERERS	.	X	.	X
666	STATIONARY FIREMEN	.	*	*	X
670	CARDING,LAPPING, & COMBING OPER.	.	X	.	X

JOB ATTRIBUTE:		VARCH	RECON	MVC	STS	WORKPACE	REPETIT	CYCLED	SETPROC	TIMEPRES	STRUCTUR	RECSUPER	SOCCONT	DISTRACT	CIVIOB	FRUST	STRAINED	SACRIFIC	CONFLICT	PUS
		WORKING CONDITIONS																		
GROUP 4 -- CONT.																				
672	SPINNERS,TWISTERS,& WINDERS	.	X	.	*															.
673	WEAVERS	.	X	.	X															.
674	TEXTILE OPERATIVES,NEC	.	X	.	*															.
680	WELDERS & FLAME-CUTTERS	.	*	X	X															.
681	WINDING OPERATIVES, NEC	.	X	.	*															.
690	MACHINE OPERATIVES, MISC. SPEC.	.	X	*	X															.
692	MACHINE OPERATIVES,NOT SPECIFIED	.	X	*	X															.
694	MISCELLANEOUS OPERATIVES	.	X	.	*															.
695	NOT SPECIFIED OPERATIVES	.	X	.	*															.
706	FORK LIFT & TOW MOTOR OPERATIVES	.	X	.	*															.
710	MTRMEN.;MINE,FACT.,LOG. CAMP,ETC	.	X	.	*															.
713	RAILROAD SWITCHMEN	.	.	X	*															.
715	TRUCK DRIVERS	.	X	.	.															.
750	CARPENTERS' HELPERS	.	X	.	X															.
751	CONSTR. LABORERS,EX. CARP. HELP.	.	X	.	*															.
752	FISHERMEN & OYSTERMEN	*	*	.	*															.
755	GARDENERS & GRNDSKPRS.,EXC.FARM	*	*	*	*															.
761	LUMBERMEN,RAFTSMEN,& WOODCHOP.	.	X	.	*															*
763	TEAMSTERS	.	X	.	.															.
764	VEHICLE WASHERS & EQ. CLEANERS	.	X	.	.															.
780	MISC, LABORERS	.	X	.	.															.
785	NOT SPECIFIED LABORERS	.	X	.	.															.
822	FARM LABORERS, WAGE WORKERS	*	*	*	*															.
903	JANITORS & SEXTONS	*	*	.	*															.
GROUP 5		57	73	39	27															86
333	MESSENGERS & OFFICE BOYS	*	*	.	.															.
623	GARAGE WORKERS & GAS STAT. ATT.	*	*	*	.															.
701	BOATMEN & CANALMEN	.	.	*	.															.
712	RAILROAD BRAKEMEN	X	*	*	.															.
714	TAXICAB DRIVERS & CHAUFFEURS	.	*	*	.															.
740	ANIMAL CARETAKERS, EXC. FARM	*	.	*	*															*
754	GARBAGE COLLECTORS	.	X	.	.															.
716	FD SERV WORKERS,NEC EX PRI HSHD	.	*	.	*															.
GROUP 6		61	73	18	22															0

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914	FOOD COUNTER & FOUNTAIN WORKERS	.	X	.	.	.
942	CHILD CARE WORKERS,EX. PR. HSHD.	*	.	.	.	.
GROUP 7		38	83	47	62	0
361	POSTAL CLERKS	.	X	.	.	.
444	FURRIERS	.	*	*	X	.
453	JEWELERS & WATCHMAKERS	*	*	X	X	.
542	SHOE REPAIRMEN	*	*	*	X	.
631	MEAT CUTTERS & BUTCHERS,EXC MAN.	*	*	*	X	.
663	SEWERS & STITCHERS	.	X	.	X	.
671	KNITTERS,LOOPERS,& TOPPERS	.	X	*	X	.
GROUP 8 -- NO OCCUPATIONS IN THIS GROUP						
GROUP 9 -- NO OCCUPATIONS IN THIS GROUP						
GROUP 10		0	55	75	84	0
362	PROOFREADERS	.	.	X	X	.
GROUP 11		64	69	35	39	84
323	EXPEDITERS & PRODUCTION CONTROL.	.	*	*	*	.
330	LIBRARY ATTENDANTS & ASSISTANTS	*	*	.	*	.
332	MAIL HANDLERS,EXCEPT POST OFFICE	*	*	.	*	.
381	STOCK CLERKS & STOREKEEPERS	*	*	*	*	.
395	NOT SPECIFIED CLERICAL WORKERS	.	*	*	*	.
910	BARTENDERS	.	*	*	.	.
981	COOKS, PRIVATE HOUSEHOLD	X	.	.	.	.
GROUP 12		68	56	27	30	92
175	ACTORS	*	*	.	.	.
226	RAILROAD CONDUCTORS	*	.	*	.	.
264	HUCKSTERS & PEDDLERS	.	*	.	.	.
266	NEWSBOYS	.	.	.	.	.
313	COLLECTORS, BILL & ACCOUNT	.	*	.	*	.
314	COUNTER CLERKS, EXCEPT FOOD	*	*	.	*	.
315	DISPATCHERS & STARTERS, VEHICLE	*	*	*	*	.
320	ENUMERATORS & INTERVIEWERS	*	.	.	*	.
364	RECEPTIONISTS	*	*	.	.	.
932	ATTENDANTS, RECREAT. & AMUSEMENT	*	*	.	.	.
940	BOARDING & LODGING HOUSE KEEPERS	*	*	.	.	.
950	HOUSEKEEPERS,EXC. PRIV. HSEHLD.	X	.	*	.	.
962	GUARDS & WATCHMEN	.	*	.	.	X
965	SHERIFFS & BAILIFFS	*	.	*	.	*
982	HOUSEKEEPERS, PRIVATE HOUSEHOLD	X	.	.	.	.

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JOB ATTRIBUTE:	VARCH	RECON	MVC	STS	WORKPACE	REPETIT	CYCLED	SETPROC	TIMEPRES	STRUCTUR	RECSUPER	SOCCONT	DISTRACT	CIVICOB	FRUST	STRAINED	SACRIFIC	CONFLICT	PUS
										WORKING CONDITIONS									
GROUP 13	50	63	61	72															84
150 AGRIC. & BIO. TECH., EXC. HEALTH	*	*	X	X															.
303 BILLING CLERKS	.	X	.	X															.
342 CALCULATING MACHINE OPERATORS	.	X	*	X															.
343 COMPUTER & PERIPH. EQUIP. OPER.	*	*	.	X															*
345 KEY PUNCH OPERATORS	.	*	.	X															.
350 TABULATING MACHINE OPERATORS	.	X	.	X															.
374 SHIPPING & RECEIVING CLERKS	*	*	*	*															.
375 STATISTICAL CLERKS	.	*	*	X															.
410 BRICKMASONS & STONEMASONS	*	*	*	X															.
415 CARPENTERS	*	*	X	X															.
422 COMPOSITORS & TYPESETTERS	.	.	X	X															.
440 FLOOR LAYERS, EXC. TILE SETTERS	*	*	*	*															.
452 INSPECTORS, NEC	.	*	X	X															.
454 JOB & DIE SETTERS, METAL	*	.	X	X															.
456 LOCOMOTIVE FIREMEN	.	.	X	*															.
470 AIR CON.,HT.,& REF. MECH. & REP.	*	.	X	X															.
472 AUTOMOBILE BODY REPAIRMEN	*	*	*	*															.
473 AUTOMOBILE MECHANICS	*	.	X	X															.
480 FARM IMPLEMENT MECH. & REPAIRMEN	*	.	X	X															.
482 HSEHLD APPL. & ACC. INST. & MECH	*	*	*	X															.
486 RLRD. & CAR SHOP MECH. & REPRMN.	*	*	X	X															.
492 MISC. MECHANICS & REPAIRMEN	*	*	X	X															.
506 OPTIC., & LENS GRIND. & POLISH.	.	*	X	X															.
510 PAINTERS,CONSTRUCTION & MAINTEN.	*	*	*	X															.
516 PIANO & ORGAN TUNERS & REPAIRMEN	.	.	*	X															.
520 PLASTERERS	.	.	*	*															.
521 PLASTERER APPRENTICES	.	.	X	X															.
531 PRESSMAN APPRENTICES	*	.	X	X															.
535 SHEETMETAL WORKERS & TINSMITHS	.	*	*	X															.
545 STATIONARY ENGINEERS	*	.	X	X															.
550 STRUCTURAL METAL CRAFTSMEN	*	.	X	X															.
575 CRAFTSMEN & KINDRED WORKERS, NEC	.	*	*	X															.
614 DRILLERS, EARTH	.	.	X	X															.
635 METAL PLATERS	.	*	X	X															.
645 PHOTOGRAPHIC PROCESS WORKERS	.	*	*	X															.
301 FARMERS(OWNERS & TENANTS)	X	.	*	.															.

GROUP 14		61	58	58	54	91
180	ATHLETES & KINDRED WORKERS	*	.	*	*	*
325	FILE CLERKS	.	*	*	X	.
331	MAIL CARRIERS, POST OFFICE	*	*	*	.	.
394	MISCELLANEOUS CLERICAL WORKERS	.	*	*	*	.
404	BOILERMAKERS	*	.	X	X	.
433	ELECT. POWER LINEMEN & CABLEMEN	*	.	X	X	*
434	ELECTROTYPERS & STEREOTYPERS	.	.	X	X	.
505	MOTION PICTURE PROJECTIONISTS	.	*	*	X	.
522	PLUMBERS & PIPE FITTERS	*	.	X	X	.
525	POWER STATION OPERATORS	*	.	X	*	.
534	ROOFERS & SLATERS	.	*	*	X	.
552	TELEPHONE INSTALLERS & REPAIRMEN	*	.	X	X	.
554	TELEPHONE LINEMEN & SPLICERS	*	.	X	X	.
661	SAILORS & DECKHANDS	*	.	X	*	.
824	FARM SERVICE LABORERS, SELF-EMPL.	*	*	*	*	.
912	COOKS, EXC. PRIV. HOUSEHOLD	*	.	.	*	.
921	DENTAL ASSISTANTS	.	*	.	X	.
922	HEALTH AIDES, EXC. NURSING	*	*	.	*	*
961	FIREMEN, FIRE PROTECTION	*	.	*	.	
GROUP 15		67	54	40	30	92
71	PODIATRISTS	*	.	*	.	.
194	WRITERS, ARTISTS, & ENTERTAIN., NEC	*	.	.	*	.
262	DEMONSTRATORS	.	.	*	*	.
283	SALES CLERKS, RETAIL TRADE	.	.	.	.	.
284	SALESMEN, RETAIL TRADE	.	.	*	.	.
384	TELEGRAPH OPERATORS	*	*	*	.	.
385	TELEPHONE OPERATORS	*	*	.	.	.
441	FOREMEN, NEC	X	.	X	*	.
703	BUS DRIVERS	*	*	*	.	.
821	FARM FOREMEN	X	.	*	.	.
915	WAITERS	*	*	.	.	.
925	NURS. AIDES, ORDERLIES, & ATTEND.	X	.	.	.	.
926	PRACTICAL NURSES	*	*	.	*	*
GROUP 16		64	51	74	77	85
190	PAINTERS & SCULPTORS	.	.	*	*	.
391	TYPISTS	.	*	*	X	.
413	CABINETMAKERS	*	*	X	X	.
423	PRINT. TRADES APPR., EX. PRESSMEN	.	.	X	X	.
426	DENTAL LABORATORY TECHNICIANS	.	.	X	X	.
431	ELECTRICIAN APPRENTICES	X	.	X	X	.
471	AIRCRAFT MECHANICS & REPAIRMEN	*	.	X	X	.
474	AUTOMOBILE MECHANICS APPRENTICES	X	.	X	X	.
481	HEAVY EQUIP. MECH., INCL. DIESEL	*	.	X	X	.
484	OFFICE MACHINE MECH. & REPAIRMEN	*	.	X	X	.
485	RADIO & TV MECHANICS & REPAIRMEN	*	.	X	X	.
504	MOLDER APPRENTICES	.	.	X	X	.
511	PAINTER APPRENTICES	.	*	*	X	.

JOB ATTRIBUTE:	VARCH	RECON	MVC	STS	WORKPACE	REPETIT	CYCLED	SETPROC	TIMEPRES	STRUCTUR	RECSUPER	SOCCONT	DISTRACT	CIVICOB	FRUST	STRAINED	SACRIFIC	CONFLICT	PUS
					WORKING CONDITIONS														
GROUP 16 -- CONT.																			
514 PAT. & MODEL MAKERS, EXC. PAPER	*	.	X	X															.
515 PHOTOENGRAVERS & LITHOGRAPHERS	.	.	X	X															.
540 SHIPFITTERS	.	.	X	*															*
543 SIGN PAINTERS & LETTERERS	.	.	X	X															.
561 TOOL & DIE MAKERS	*	.	X	X															.
571 SPECIFIED CRAFT APPRENTICES, NEC	*	.	X	X															.
572 NOT SPECIFIED APPRENTICES	X	.	X	X															.
613 DRESSMAKERS & SMSTRSS.,EX. FACT.	*	*	*	X															.
GROUP 17	57	51	73	82															85
376 STENOGRAPHERS	.	*	.	X															.
411 BRICKMASONS & STONEMAS.,APPRENT.	*	.	X	X															.
430 ELECTRICIANS	X	.	X	X															.
515 DRY WALL INSTALLERS & LATHERS	.	.	X	X															.
GROUP 18	68	43	27	43															0
311 CLERICAL ASSIST., SOCIAL WELFARE	.	.	.	X															.
924 LAY MIDWIVES	*	.	*	.															.
935 BARBERS	*	.	.	*															.
944 HAIRDRESSERS & COSMETOLOGISTS	*	.	.	*															.
945 PERSONAL SERVICE APPRENTICES	*	.	.	*															.
GROUP 19	0	0	52	39															0
92 POLITICAL SCIENTISTS	.	.	.	.															.
172 TOOL PROGRAMMERS, NUM. CONTROL	.	.	X	X															.
131 AUTHORS	.	.	*	.															.
GROUP 20	55	46	70	47															84
32 LIBRARIANS	*	.	.	.															.
213 CONSTR. INSPECT., PUBLIC ADMIN.	*	.	X	X															.
215 INSPECT., EXC. CONSTR., PUB. AD.	*	.	X	*															.

321	ESTIMATORS & INVESTIGATORS, NEC	.	.	X	*	.
GROUP 21		71	44	41	23	87
24	FARM MANAGEMENT ADVISORS	*	.	.	.	.
25	FORESTERS & CONSERVATIONISTS	*	.	*	.	*
74	DIETITIANS	*	.	X	.	.
90	RELIGIOUS WORKERS, NEC	.	.	.	.	.
100	SOCIAL WORKERS	*	.	.	.	.
101	RECREATION WORKERS	*	.	.	.	.
135	MISC. TEACHERS, COLLEGE	.	.	.	.	.
142	ELEMENTARY SCHOOL TEACHERS	*	.	.	.	.
193	RADIO & TELEVISION ANNOUNCERS	X	.	.	*	.
205	BUYERS, WHOLESALE & RETAIL TRADE	.	.	.	.	.
211	FUNERAL DIRECTORS	X	.	X	.	.
216	MANAGERS & SUPERS., BUILDING	*	.	*	.	.
220	OFFICE MANAGERS, NEC	*	.	X	.	.
223	OFFIC. OF LODGES, SOC., & UNIONS	*	.	.	.	.
224	POSTMASTERS & MAIL SUPERINTEND.	X	.	*	.	.
230	REST., CAFETERIA, & BAR MANAGERS	*	.	*	.	.
231	SALES MAN. & DEPT. HDS.,RET. TR.	*	.	*	.	.
233	SALES MANAGERS,EXC. RETAIL TRADE	*	*	.	.	.
260	ADVERTISING AGENTS & SALESMEN	.	.	*	.	.
261	AUCTIONEERS	.	.	.	.	.
281	SALES REP., MANUFACT. INDUSTRIES	.	.	*	.	.
282	SALES REP., WHOLESALE TRADE	.	.	.	.	.
285	SALESMEN OF SERV. & CONSTRUCTION	.	.	.	.	.
312	CLERICAL SUPERVISORS, NEC	*	.	*	*	.
326	INS. ADJUST.,EXAMIN.,& INVESTIG.	*	.	X	.	.
334	METER READERS, UTILITIES	*	*	*	*	.
390	TICKET, STATION, & EXPR. AGENTS	*	.	*	.	.
802	FARM MANAGERS	*	.	.	.	.
931	AIRLINE STEWARDESSES	X	.	.	.	*
964	POLICEMEN & DETECTIVES	*	.	*	.	*
GROUP 22		47	55	73	77	0
151	CHEMICAL TECHNICIANS	.	.	X	X	.
161	SURVEYORS	.	.	X	X	.
162	ENG. & SCIENCE TECHNICIANS, NEC	*	.	X	X	.
305	BOOKKEEPERS	.	*	*	X	.
GROUP 23		65	54	47	51	89
154	INDUSTRIAL ENG. TECHNICIANS	*	.	X	*	.
164	AIR TRAFFIC CONTROLLERS	*	.	.	.	*
173	TECH. EX. HEALTH,ENG.,& SCI.,NEC	*	.	X	X	.
182	DANCERS	*	.	.	*	.
191	PHOTOGRAPHERS	*	.	*	X	.
360	PAYROLL & TIMEKEEPING CLERKS	.	*	*	X	.

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JOB ATTRIBUTE:	VARCH	RECON	MVC	STS	WORKPACE	REPETIT	CYCLED	SETPROC	TIMEPRES	STRUCTUR	RECSUPER	SOCCONT	DISTRACT	CIVICOB	FRUST	STRAINED	SACRIFIC	CONFLICT	PUS
					WORKING CONDITIONS														
GROUP 24	59	46	40	39															89
26 HOME MANAGEMENT ADVISORS	X	.	.	.															.
85 HEALTH TECHNOL. & TECHNIC., NEC	.	.	*	X															.
123 ART, DRAMA, & MUSIC TEACHERS,COL	*	.	*	*															.
141 ADULT EDUCATION TEACHERS,EXC.COL	*	.	.	.															.
145 TEACHERS, EXC. COLLEGE, NEC	*	.	*	.															.
221 OFFICERS, PILOTS, & PURSERS;SHIP	.	.	X	*															*
310 CASHIERS	.	*	.	X															.
342 TEACHER AIDES, EXC. SCHOOL MON.	*	.	*	*															.
704 COND. & MTRMEN.,URB. RAIL TRANS.	.	.	.	.															.
GROUP 25	74	48	79	79															84
153 ELECTRIC. & ELECTRON. ENG. TECH.	*	.	X	X															.
155 MECHANICAL ENG. TECHNICIANS	*	*	X	X															.
165 EMBALMERS	X	.	X	X															.
171 RADIO OPERATORS	*	.	X	*															.
341 BOOKKEEPING & BILLING MACH. OPR.	.	X	.	X															.
416 CARPENTER APPRENTICES	X	.	X	X															.
420 CARPET INSTALLERS	.	.	X	X															.
425 DECORATORS & WINDOW DRESSERS	.	.	*	*															.
461 MACHINISTS	X	.	X	X															.
462 MACHINIST APPRENTICES	X	.	X	X															.
471 MECHANIC, EXC. AUTO, APPRENTICES	*	.	X	X															.
523 PLUMBER & PIPE FITTER APPRENT.	*	.	X	X															.
536 SHEETMETAL APPRENTICES	X	.	X	X															.
551 TAILORS	.	.	X	X															.
562 TOOL & DIE MAKER APPRENTICES	X	.	X	X															.
GROUP 26	92	0	64	66															0
183 DESIGNERS	.	.	*	*															.
502 MILLWRIGHTS	X	.	X	X															.
GROUP 27	83	43	35	49															0
61 CHIROPRACTORS	*	.	*	.															.
34 THERAPY ASSISTANTS	*	.	*	X															.

124	COACHES & PHYS. ED. TEACHERS,COL	*	.	*	.	.
143	PREKIND. & KINDERGARTEN TEACHERS	X	.	.	.	.
301	BANK TELLERS	*	*	*	X	.
370	SECRETARIES, LEGAL	X	.	.	X	.
371	SECRETARIES, MEDICAL	.	.	.	X	.
372	SECRETARIES, NEC	X	.	.	*	.
GROUP 28		47	43	84	41	0
3	COMPUTER PROGRAMMERS	.	*	X	X	.
5	COMPUTER SPECIALISTS, N.E.C.	X	.	X	.	.
34	ACTUARIES	.	.	X	X	.
35	MATHEMATICIANS	*	.	X	*	.
36	STATISTICIANS	.	.	X	*	.
43	ATMOSPHERIC & SPACE SCIENTISTS	.	.	X	.	.
94	SOCIOLOGISTS	.	.	X	.	.
96	SOCIAL SCIENTISTS, NEC	*	.	X	.	.
GROUP 29		68	0	81	41	86
1	ACCOUNTANTS	*	.	X	X	.
55	OPERAT. & SYST. RESEARC. & ANAL.	*	.	X	.	.
91	ECONOMISTS	*	.	X	*	.
GROUP 30		68	0	52	26	84
4	COMPUTER SYSTEMS ANALYSTS	*	.	X	.	.
30	JUDGES	*	.	*	.	.
31	LAWYERS	X	.	*	.	.
56	PERSONNEL & LABOR REL. WORKERS	*	.	*	.	.
62	HEALTH REC. TECHNOL. & TECHNIC.	*	.	X	X	.
86	CLERGYMEN	X	.	.	.	.
93	PSYCHOLOGISTS	X	.	X	.	.
102	AGRICULTURE TEACHERS, COLLEGE	.	.	.	.	.
140	TEACHERS, COL., SUBJ. NOT SPEC.	.	.	.	.	.
174	VOCATIONAL AND EDUCAT COUNSELORS	*	.	.	.	.
184	EDITORS & REPORTERS	*	.	*	*	.
192	PUB. REL. MEN & PUBLICITY WRITER	*	.	.	.	.
195	RESEARCH WORKERS, NOT SPECIFIED	*	.	*	.	.
201	ASS.,CON.,& TREAS.,LOC. PUB. AD.	*	.	X	*	.
202	BANK OFFICERS & FINANC. MANAGERS	.	.	*	*	.
203	BUYERS & SHIPPERS, FARM PRODUCTS	*	.	*	.	.
210	CREDIT MEN	.	.	X	.	.
212	HEALTH ADMINISTRATORS	X	.	*	.	.
222	OFFICIALS & ADM., PUB. ADM., NEC	*	.	*	.	.
225	PURCHASING AGENTS & BUYERS, NEC	*	.	*	*	.
235	SCHOOL ADMINISTRATORS, COLLEGE	.	.	*	.	.
240	SCHOOL ADMINISTRAT.,ELEM. & SEC.	.	.	*	.	.
245	MANAGERS AND ADMINISTRATORS, NEC	*	.	*	.	.
260	INS. AGENTS,BROKERS,& UNDERWRIT.	.	.	X	*	.
270	REAL ESTATE AGENTS & BROKERS	*	.	*	.	.

JOB ATTRIBUTE:	VARCH	RECON	MVC	STS	WORKPACE	REPETIT	CYCLED	SEPROC	TIMEPRES	STRUCTUR	RECSUPER	SOCCONT	DISTRACT	CIVICOB	FRUST	STRAINED	SACRIFIC	CONFLICT	PUS
					WORKING CONDITIONS														
GROUP 30 -- CONT.																			
271 STOCK & BOND SALESMEN	.	.	*	.															.
363 REAL ESTATE APPRAISERS	X	.	.	.															.
GROUP 31	83	0	84	76															85
6 AERONAUT. & ASTRONAUT. ENGINEERS	X	.	X	X															.
10 CHEMICAL ENGINEERS	*	.	X	X															.
11 CIVIL ENGINEERS	X	.	X	X															.
156 MATHEMATICAL TECHNICIANS	*	.	X	X															.
GROUP 32	80	0	74	49															0
2 ARCHITECTS	*	.	*	*															.
12 ELECTRICAL & ELECTRONIC ENGINRS.	*	.	X	*															.
13 INDUSTRIAL ENGINEERS	*	.	X	X															.
14 MECHANICAL ENGINEERS	*	.	X	*															.
20 MINING ENGINEERS	X	.	X	*															.
21 PETROLEUM ENGINEERS	*	.	X	*															.
23 ENGINEERS, NEC	*	.	X	*															.
33 ARCHIVISTS AND CURATORS	*	.	*	*															.
43 CHEMISTS	*	.	X	*															.
51 GEOLOGISTS	X	.	X	X															.
53 PHYSICISTS AND ASTRONOMERS	.	.	X	X															.
95 URBAN & REGIONAL PLANNERS	X	.	.	*															.
GROUP 33	69	0	64	36															87
22 SALES ENGINEERS	*	.	X	.															.
75 REGISTERED NURSES	*	.	X	*															*
76 THERAPISTS	*	.	*	.															.
113 HEALTH SPECIALITIES TEACHERS,COL	*	.	*	*															.
144 SECONDARY SCHOOL TEACHERS	*	.	*	*															.
GROUP 34	69	0	83	69															97
15 METALLURG. & MATERIALS ENGINRS.	X	.	X	X															.

42	AGRICULTURAL SCIENTISTS	.	.	X	X	.
44	BIOLOGICAL SCIENTISTS	*	.	X	X	.
52	MARINE SCIENTISTS	*	.	*	*	*
54	LIFE & PHYSICAL SCIENTISTS, NEC	.	.	X	X	.
64	PHARMACISTS	.	.	X	X	.
72	VETERINARIANS	X	.	X	*	.
80	CLIN. LAB. TECHNOLOG. & TECHNIC.	X	.	X	X	.
152	DRAFTSMEN	.	.	X	X	.
GROUP 35		59	0	58	34	97
73	HEALTH PRACTITIONERS, NEC	*	.	*	.	.
163	AIRPLANE PILOTS	*	.	X	X	X
185	MUSICIANS & COMPOSERS	.	.	*	.	.
GROUP 36		38	0	70	41	84
62	DENTISTS	*	.	X	.	.
63	OPTOMETRISTS	.	.	X	.	.
65	PHYSICIANS, MEDICAL & OSTEOPATH.	.	.	X	.	.
81	DENTAL HYGIENISTS	.	.	.	X	.
83	RADIOLOGIC TECHNOLOG. & TECHNIC.	*	.	*	X	.
OCCUPATIONS THAT WERE NOT GROUPED BECAUSE OF LACK OF DATA TO DO SO						
103	ATMO,EARTH,MAR,& SPACE TEACH,COL	-	-	-	-	-
104	BIOLOGY TEACHERS, COLLEGE	-	-	-	-	-
105	CHEMISTRY TEACHERS, COLLEGE	-	-	-	-	-
110	PHYSICS TEACHERS, COLLEGE	-	-	-	-	-
111	ENGINEERING TEACHERS, COLLEGE	-	-	-	-	-
112	MATHEMATICS TEACHERS, COLLEGE	-	-	-	-	-
114	PSYCHOLOGY TEACHERS, COLLEGE	-	-	-	-	-
115	BUSINESS & COMMERCE TEACHERS,COL	-	-	-	-	-
116	ECONOMICS TEACHERS, COLLEGE	-	-	-	-	-
120	HISTORY TEACHERS, COLLEGE	-	-	-	-	-
121	SOCIOLOGY TEACHERS, TEACHERS	-	-	-	-	-
122	SOCIAL SCIENCE TEACHERS, NEC,COL	-	-	-	-	-
125	EDUCATION TEACHERS, COLLEGE	-	-	-	-	-
126	ENGLISH TEACHERS, COLLEGE	-	-	-	-	-
130	FOREIGN LANGUAGE TEACHERS,COL	-	-	-	-	-
131	HOME ECONOMICS TEACHERS, COL	-	-	-	-	-
132	LAW TEACHERS, COLLEGE	-	-	-	-	-
133	THEOLOGY TEACHERS, COLLEGE	-	-	-	-	-
134	TRADE,IND., & TECH. TEACHERS,COL	-	-	-	-	-
170	FLIGHT ENGINEERS	-	-	-	-	-
393	TELEGRAPH MESSENGERS	-	-	-	-	-
475	DATA PROCESSING MACH. REPAIRMEN	-	-	-	-	-
512	PAPERHANGERS	-	-	-	-	-
605	CHAINMEN,RODMEN,& AXMEN;SURVEY.	-	-	-	-	-
634	MEAT WRAPPERS, RETAIL TRADE	-	-	-	-	-
770	WAREHOUSEMEN, NEC	-	-	-	-	-

JOB ATTRIBUTE:	WORKING CONDITIONS																		
	VARCH	REPCON	MVC	STS	WORKPACE	REPETIT	CYCLED	SETPROC	TIMEPRES	STRUCTUR	RECSUPER	SOCCONT	DISTRACT	CIVICOB	FRUST	STRAINED	SACRIFIC	CONFLICT	PUS
OCCUPATIONS NOT GROUPED -- CONT.																			
323 FARM LABORERS,UNPAID FAM. WORKER	-	-	-	-															-
923 HEALTH TRAINEES	-	-	-	-															-
952 SCHOOL MONITORS	-	-	-	-															-
954 WELFARE SERVICE AIDES	-	-	-	-															-
963 MARSHALS & CONSTABLES	-	-	-	-															-

Appendix I

Percent of the Work Force Employed in Each Occupational Group and the Holland and Prestige Codes of Individual Occupations

Key

Numbers next to the group numbers are percentiles for the group average on the variable in question.

. A low score

* A moderate score

X A high score

- Data are not available.

Note

Data for the PAQ variables have been omitted pending permission from PAQ Services to release these data (per our agreement in purchasing their proprietary data).

		PERCENT OF WORKFORCE	HOLLAND CODE	PRESTIGE
GROUP 1		2.6		
626	HEATERS, METAL		R	37.3
753	FREIGHT & MATERIAL HANDLERS		R	23.0
760	LONGSHOREMEN & STEVEDORES		R	24.3
762	STOCK HANDLERS		R	15.3
901	CHMBRMDS. & MDS.,EXC. PRI. HSHD.		R	16.9
902	CLEANERS & CHARWOMEN		R	18.2
913	DISHWASHERS		R	.0
983	LAUNDRESSES, PRIVATE HOUSEHOLD		R	2.0
GROUP 2		1.9		
443	FURNITURE & WOOD FINISHERS		R	32.7
705	DELIVERYMEN & ROUTEMEN		E	30.5
953	USHERS,RECREATION & AMUSEMENT		R	3.7
960	CROSSING GUARDS & BRIDGE TENDERS		R	15.0
984	MAIDS & SERVANTS,PRIV. HOUSEHOLD		R	11.4
GROUP 3		0.6		
711	PARKING ATTENDANTS		R	14.1
911	BUSBOYS		R	.0
933	ATTENDANTS, PERSONAL SERVICE,NEC		R	26.4
934	BAGGAGE PORTERS & BELLHOPS		S	20.9
941	SHOESHINERS		R	1.6
943	ELEVATOR OPERATORS		R	18.3
980	CHILD CARE WORKERS,PRI. HOUSEHD.		S	9.9
GROUP 4		19.1		
344	DUPLICATING MACHINE OPERATORS		C	30.1
355	OFFICE MACHINE OPERATORS, NEC		C	34.0

392	WEIGHERS	R	25.5
401	AUTOMOBILE ACCESSORIES INSTALLER	R	34.8
402	BAKERS	R	33.9
403	BLACKSMITHS	R	35.7
405	BOOKBINDERS	R	36.2
412	BULLDOZER OPERATORS	R	29.6
421	CEMENT & CONCRETE FINISHERS	R	30.9
424	CRANEMEN, DERRICKMEN, & HOISTMEN	R	31.9
435	ENGRAVERS, EXC. PHOTOENGRAVERS	R	36.3
436	EXCAV.,GRAD.,& RD MACH OP; EX BDZR	R	31.2
442	FORGEMEN & HAMMERMEN	R	35.9
445	GLAZIERS	R	35.7
446	HT. TREATERS,ANNEAL.,& TEMPERERS	R	33.2
450	INSP.,SCALERS,& GRAD.;LOG & LUM.	R	29.7
455	LOCOMOTIVE ENGINEERS	R	47.5
483	LOOM FIXERS	R	32.3
495	NOT SPEC. MECHANICS & REPAIRMEN	R	38.8
501	MILLERS; GRAIN, FLOUR, & FEED	R	26.5
503	MOLDERS, METAL	R	34.5
530	PRSSMN. & PLATE PRNTRS.,PRINTING	R	43.2
533	ROLLERS & FINISHERS, METAL	R	30.3
545	STONE CUTTERS & STONE CARVERS	R	28.4
563	TILE SETTERS	R	35.4
563	UPHOLSTERERS	R	28.0
601	ASBESTOS & INSULATION WORKERS	R	37.4
602	ASSEMBLERS	R	30.3
603	BLASTERS & POWDERMEN	R	35.2
604	BOTTLING & CANNING OPERATIVES	R	21.0
610	CHECKERS,EXAM.,& INSPECT.;MANUF.	R	34.4
611	CLOTHING IRONERS & PRESSERS	R	24.2
612	CUTTING OPERATIVES, NEC	R	27.4
620	DYERS	R	23.6
621	FILERS,POLISH.,SANDERS,& BUFFERS	R	24.2
622	FURNACEMEN,SMELTERMEN,& POURERS	R	28.3
624	GRADERS & SORTERS, MANUFACTURING	R	21.3
625	PROD GRAD & PACK,EXC FACT & FARM	R	13.3
630	LAUN. & DRY CLEAN. OPERATIV.,NEC	R	19.2
633	MEAT CUTTERS & BUTCHERS,MANUF.	R	29.0
636	MILLINERS	R	30.3
640	MINE OPERATIVES,NEC	R	27.6
641	MIXING OPERATIVES	R	26.9
642	OILERS & GREASERS, EXC. AUTO	R	25.1
643	PACKERS & WRAP.,EX. MEAT & PROD.	R	23.4
644	PAINTERS, MANUFACTURED ARTICLES	R	29.6
650	DRILL PRESS OPERATIVES	R	32.3
651	GRINDING MACHINE OPERATIVES	R	31.9
652	LATHE & MILLING MACH. OPERATIVES	R	31.7
653	PRECISION MACH. OPERATIVES, NEC	R	35.6
655	PUNCH & STAMP. PRESS OPERATIVES	R	32.2
660	RIVETERS & FASTENERS	R	25.9
662	SAWYERS	R	21.6
664	SHOEMAKING MACHINE OPERATIVES	R	20.2
665	SOLDERERS	R	30.3
666	STATIONARY FIREMEN	R	34.1
673	CARDING,LAPPING, & COMBING OPER.	R	19.9

		PERCENT OF WORKFORCE	HOLLAND CODE	PRESTIGE
GROUP 4 -- CONT.				
672	SPINNERS,TWISTERS,& WINDERS		R	21.7
673	WEAVERS		R	29.3
674	TEXTILE OPERATIVES,NEC		R	22.9
680	WELDERS & FLAME-CUTTERS		R	33.4
681	WINDING OPERATIVES, NEC		R	32.1
690	MACHINE OPERATIVES, MISC. SPEC.		R	29.3
692	MACHINE OPERATIVES,NOT SPECIFIED		R	29.3
694	MISCELLANEOUS OPERATIVES		R	29.3
695	NOT SPECIFIED OPERATIVES		R	29.3
705	FORK LIFT & TOW MOTOR OPERATIVES		R	22.6
710	MTRMEN.;MINE,FACT.,LOG. CAMP,ETC		R	26.4
713	RAILROAD SWITCHMEN		R	32.4
715	TRUCK DRIVERS		R	29.1
750	CARPENTERS' HELPERS		R	9.3
751	CONSTR. LABORERS,EX. CARP. HELP.		R	20.5
752	FISHERMEN & OYSTERMEN		R	18.1
755	GARDENERS & GRNDSKPRS.,EXC.FARM		R	15.5
761	LUMBERMEN,RAFTSMEN,& WOODCHOP.		R	14.5
763	TEAMSTERS		R	22.2
764	VEHICLE WASHERS & EQ. CLEANERS		R	12.9
780	MISC. LABORERS		R	19.2
785	NOT SPECIFIED LABORERS		R	19.2
822	FARM LABORERS, WAGE WORKERS		R	10.8
903	JANITORS & SEXTONS		R	22.7
GROUP 5		1.5		
333	MESSENGERS & OFFICE BOYS		C	16.7
623	GARAGE WORKERS & GAS STAT. ATT.		S	19.3
701	BOATMEN & CANALMEN		R	30.8
712	RAILROAD BRAKEMEN		R	35.7
714	TAXICAB DRIVERS & CHAUFFEURS		R	24.2
740	ANIMAL CARETAKERS, EXC. FARM		R	23.3
754	GARBAGE COLLECTORS		R	11.5
915	ED SERV WORKERS,NEC EX PRI HSHD		R	13.9
GROUP 6		0.4		

914	FOOD COUNTER & FOUNTAIN WORKERS		R	14.6
942	CHILD CARE WORKERS,EX. PR. HSHD.		S	23.0
GROUP 7		1.9		
361	POSTAL CLERKS		C	41.2
444	FURRIERS		A	39.3
453	JEWELERS & WATCHMAKERS		R	41.2
542	SHOE REPAIRMEN		R	26.2
631	MEAT CUTTERS & BUTCHERS,EXC MAN.		R	36.2
653	SEWERS & STITCHERS		C	28.9
671	KNITTERS,LOOPERS,& TOPPERS		R	26.4
GROUP 8 -- NO OCCUPATIONS IN THIS GROUP				
GROUP 9 -- NO OCCUPATIONS IN THIS GROUP				
GROUP 10		0.04		
362	PROOFREADERS		C	40.7
GROUP 11		2.5		
323	EXPEDITERS & PRODUCTION CONTROL.		S	43.6
350	LIBRARY ATTENDANTS & ASSISTANTS		C	33.1
332	MAIL HANDLERS,EXCEPT POST OFFICE		C	30.8
381	STOCK CLERKS & STOREKEEPERS		R	33.6
399	NOT SPECIFIED CLERICAL WORKERS		C	39.6
910	BARTENDERS		S	31.0
931	COOKS, PRIVATE HOUSEHOLD		R	17.4
GROUP 12		2.1		
175	ACTORS		A	51.8
226	RAILROAD CONDUCTORS		R	45.9
264	HUCKSTERS & PEDDLERS		E	25.2
266	NEWSBOYS		E	5.3
313	COLLECTORS, BILL & ACCOUNT		R	34.9
314	COUNTER CLERKS, EXCEPT FOOD		C	33.0
315	DISPATCHERS & STARTERS, VEHICLE		E	39.2
320	ENUMERATORS & INTERVIEWERS		S	30.3
364	RECEPTIONISTS		C	36.3
932	ATTENDANTS, RECREAT. & AMUSEMENT		R	17.2
940	BOARDING & LODGING HOUSE KEEPERS		E	33.4
950	HOUSEKEEPERS,EXC. PRIV. HSEHLD.		S	36.6
962	GUARDS & WATCHMEN		R	26.0
965	SHERIFFS & BAILIFFS		S	35.1
982	HOUSEKEEPERS, PRIVATE HOUSEHOLD		S	15.8

		PERCENT OF WORKFORCE	HOLLAND CODE	PRESTIGE
GROUP 13		8.3		
150	AGRIC. & BIO. TECH., EXC. HEALTH		R	42.1
303	BILLING CLERKS		C	33.5
342	CALCULATING MACHINE OPERATORS		C	37.7
343	COMPUTER & PERIPH. EQUIP. OPER.		I	44.4
345	KEY PUNCH OPERATORS		C	39.1
350	TABULATING MACHINE OPERATORS		C	36.4
374	SHIPPING & RECEIVING CLERKS		R	32.1
375	STATISTICAL CLERKS		C	41.5
410	BRICKMASONS & STONEMASONS		R	35.5
415	CARPENTERS		R	33.7
422	COMPOSITORS & TYPESETTERS		R	43.6
440	FLOOR LAYERS, EXC. TILE SETTERS		R	34.1
452	INSPECTORS, NEC		R	40.7
454	JOB & DIE SETTERS, METAL		R	39.4
456	LOCOMOTIVE FIREMEN		R	45.7
470	AIR CON., HT., & REF. MECH. & REP.		R	41.4
472	AUTOMOBILE BODY REPAIRMEN		R	33.2
473	AUTOMOBILE MECHANICS		R	36.6
480	FARM IMPLEMENT MECH. & REPAIRMEN		R	36.6
482	HSEHLD APPL. & ACC. INST. & MECH		R	37.5
486	RLRD. & CAR SHOP MECH. & REPRMN.		R	38.2
492	MISC. MECHANICS & REPAIRMEN		R	38.4
506	OPTIC., & LENS GRIND. & POLISH.		R	36.6
510	PAINTERS,CONSTRUCTION & MAINTEN.		R	31.3
516	PIANO & ORGAN TUNERS & REPAIRMEN		R	37.5
520	PLASTERERS		R	35.5
521	PLASTERER APPRENTICES		R	33.5
531	PRESSMAN APPRENTICES		R	37.3
535	SHEETMETAL WORKERS & TINSMITHS		R	42.4
545	STATIONARY ENGINEERS		R	42.4
550	STRUCTURAL METAL CRAFTSMEN		R	39.5
575	CRAFTSMEN & KINDRED WORKERS, NEC		R	34.1
614	DRILLERS, EARTH		R	32.0
535	METAL PLATERS		R	33.5
645	PHOTOGRAPHIC PROCESS WORKERS		R	35.0
801	FARMERS(OWNERS & TENANTS)		R	30.7

GROUP 14		4.3		
130	ATHLETES & KINDRED WORKERS		S	38.9
325	FILE CLERKS		C	34.9
331	MAIL CARRIERS, POST OFFICE		K	34.5
394	MISCELLANEOUS CLERICAL WORKERS		C	39.6
404	BOILERMAKERS		R	40.4
433	ELECT. POWER LINEMEN & CABLEMEN		R	43.6
434	ELECTROTYPERS & STEREOTYPERS		R	42.6
505	MOTION PICTURE PROJECTIONISTS		R	37.9
522	PLUMBERS & PIPE FITTERS		R	43.4
525	POWER STATION OPERATORS		R	46.9
534	ROOFERS & SLATERS		R	29.7
552	TELEPHONE INSTALLERS & REPAIRMEN		R	41.0
554	TELEPHONE LINEMEN & SPLICERS		R	41.3
561	SAILORS & DECKHANDS		R	29.3
324	FARM SERVICE LABORERS,SELF-EMPL.		R	29.6
912	COOKS, EXC. PRIV. HOUSEHOLD		R	30.2
921	DENTAL ASSISTANTS		S	43.9
922	HEALTH AIDES, EXC. NURSING		S	38.5
951	FIREMEN, FIRE PROTECTION		R	41.2
GROUP 15		9.2		
71	PODIATRISTS		S	64.7
194	WRITERS,ARTIST ,& ENTERTAIN.,NEC		A	53.7
262	DEMONSTRATORS		E	27.5
283	SALES CLERKS, RETAIL TRADE		E	30.7
284	SALESMEN, RETAIL TRADE		E	39.7
364	TELEGRAPH OPERATORS		C	40.5
365	TELEPHONE OPERATORS		C	35.7
441	FOREMEN, NEC		R	44.9
703	BUS DRIVERS		R	30.2
821	FARM FOREMEN		R	32.6
915	WAITERS		R	23.5
925	NURS. AIDES,ORDERLIES,& ATTEND.		S	33.6
926	PRACTICAL NURSES		S	43.3
GROUP 16		3.3		
190	PAINTERS & SCULPTORS		A	52.5
391	TYPISTS		C	37.6
413	CABINETMAKERS		R	34.4
423	PRINT. TRADES APPR.,EX. PRESSMEN		R	35.9
426	DENTAL LABORATORY TECHNICIANS		R	44.9
431	ELECTRICIAN APPRENTICES		R	40.5
471	AIRCRAFT MECHANICS & REPAIRMEN		R	43.4
474	AUTOMOBILE MECHANICS APPRENTICES		R	31.1
481	HEAVY EQUIP. MECH., INCL. DIESEL		R	39.8
484	OFFICE MACHINE MECH. & REPAIRMEN		R	42.6
485	RADIO & TV MECHANICS & REPAIRMEN		R	41.0
504	MOLDER APPRENTICES		R	32.7
511	PAINTER APPRENTICES		R	32.8

		PERCENT OF WORKFORCE	HOLLAND CODE	PRESTIGE
GROUP 16 -- CONT.				
514	PAT. & MODEL MAKERS, EXC. PAPER		I	44.1
515	PHOTOENGRAVERS & LITHOGRAPHERS		A	44.7
540	SHIPFITTERS		R	43.2
543	SIGN PAINTERS & LETTERERS		A	39.2
561	TOOL & DIE MAKERS		R	44.4
571	SPECIFIED CRAFT APPRENTICES, NEC		R	34.1
572	NOT SPECIFIED APPRENTICES		R	34.1
613	DRESSMAKERS & SMSTRSS.,EX. FACT.		R	29.3
GROUP 17		0.8		
376	STENOGRAPHERS		C	42.5
411	BRICKMASONS & STONEMAS.,APPRENT.		R	35.8
430	ELECTRICIANS		R	43.8
615	DRY WALL INSTALLERS & LATHERS		R	37.7
GROUP 18		0.9		
311	CLERICAL ASSIST., SOCIAL WELFARE		C	35.3
924	LAY MIDWIVES		S	33.3
935	BARBERS		R	27.9
944	HAIRDRESSERS & COSMETOLOGISTS		S	38.5
945	PERSONAL SERVICE APPRENTICES		S	21.1
GROUP 19		0.04		
92	POLITICAL SCIENTISTS		S	66.8
172	TOOL PROGRAMMERS, NUM. CONTROL		R	55.5
181	AUTHORS		A	68.5
GROUP 20		0.6		
32	LIBRARIANS		S	63.7
213	CONSTR. INSPECT., PUBLIC ADMIN.		S	49.6
215	INSPECT., EXC. CONSTR., PUB. AD.		S	45.9

321	ESTIMATORS & INVESTIGATORS, NEC	C	48.3
GROUP 21		7.0	
24	FARM MANAGEMENT ADVISORS	S	60.8
25	FORESTERS & CONSERVATIONISTS	R	45.3
74	DIETITIANS	S	47.2
90	RELIGIOUS WORKERS, NEC	S	53.9
100	SOCIAL WORKERS	S	60.7
101	RECREATION WORKERS	S	51.9
135	MISC. TEACHERS, COLLEGE	S	71.9
142	ELEMENTARY SCHOOL TEACHERS	S	63.6
193	RADIO & TELEVISION ANNOUNCERS	E	48.8
205	BUYERS, WHOLESALE & RETAIL TRADE	E	50.7
211	FUNERAL DIRECTORS	S	54.2
216	MANAGERS & SUPERS., BUILDING	S	41.5
220	OFFICE MANAGERS, NEC	E	57.3
223	OFFIC. OF LODGES, SOC., & UNIONS	S	56.0
224	POSTMASTERS & MAIL SUPERINTEND.	E	49.0
230	REST., CAFETERIA, & BAR MANAGERS	E	43.7
231	SALES MAN. & DEPT. HDS.,RET. TR.	E	48.0
233	SALES MANAGERS,EXC. RETAIL TRADE	E	60.8
260	ADVERTISING AGENTS & SALESMEN	A	53.5
261	AUCTIONEERS	E	38.4
281	SALES REP., MANUFACT. INDUSTRIES	E	47.1
282	SALES REP., WHOLESALE TRADE	E	43.4
285	SALESMEN OF SERV. & CONSTRUCTION	E	41.0
312	CLERICAL SUPERVISORS, NEC	C	52.3
326	INS. ADJUST.,EXAMIN.,& INVESTIG.	E	55.3
334	METER READERS, UTILITIES	R	34.1
390	TICKET, STATION, & EXPR. AGENTS	S	44.2
802	FARM MANAGERS	E	39.1
931	AIRLINE STEWARDESSES	E	44.7
964	POLICEMEN & DETECTIVES	S	37.3
GROUP 22		2.4	
151	CHEMICAL TECHNICIANS	I	45.5
161	SURVEYORS	R	49.4
162	ENG. & SCIENCE TECHNICIANS, NEC	I	46.4
305	BOOKKEEPERS	C	45.9
GROUP 23		0.4	
154	INDUSTRIAL ENG. TECHNICIANS	R	46.0
164	AIR TRAFFIC CONTROLLERS	R	52.2
173	TECH. EX. HEALTH,ENG.,& SCI.,NEC	R	44.5
182	DANCERS	A	40.4
191	PHOTOGRAPHERS	A	42.9
360	PAYROLL & TIMEKEEPING CLERKS	C	44.7

		PERCENT OF WORKFORCE	HOLLAND CODE	PRESTIGE
GROUP 24		1.7		
26	HOME MANAGEMENT ADVISORS		S	61.9
85	HEALTH TECHNOL. & TECHNIC., NEC		I	46.7
123	ART, DRAMA, & MUSIC TEACHERS,COL		A	68.1
141	ADULT EDUCATION TEACHERS,EXC.COL		S	58.0
145	TEACHERS, EXC. COLLEGE, NEC		S	49.1
221	OFFICERS, PILOTS, & PURSERS;SHIP		R	43.2
310	CASHIERS		C	27.4
382	TEACHER AIDES, EXC. SCHOOL MON.		S	29.1
704	COND. & MTRMEN.,URB. RAIL TRANS.		R	35.5
GROUP 25		1.1		
153	ELECTRIC. & ELECTRON. ENG. TECH.		I	47.9
155	MECHANICAL ENG. TECHNICIANS		R	47.7
165	EMBALMERS		S	50.3
171	RADIO OPERATORS		R	39.0
341	BOOKKEEPING & BILLING MACH. OPR.		C	40.8
416	CARPENTER APPRENTICES		R	36.7
420	CARPET INSTALLERS		R	33.7
425	DECORATORS & WINDOW DRESSERS		A	43.5
461	MACHINISTS		R	41.5
462	MACHINIST APPRENTICES		R	38.1
491	MECHANIC, EXC. AUTO. APPRENTICES		R	37.6
523	PLUMBER & PIPE FITTER APPRENT.		R	40.7
536	SHEETMETAL APPRENTICES		R	39.8
551	TAILORS		R	31.7
562	TOOL & DIE MAKER APPRENTICES		R	40.9
GROUP 26		0.2		
183	DESIGNERS		A	55.5
502	MILLWRIGHTS		R	43.0
GROUP 27		4.1		
61	CHIROPRACTORS		I	61.8

84	THERAPY ASSISTANTS		S	37.2
124	COACHES & PHYS. ED. TEACHERS,COL		S	68.8
143	PREKIND. & KINDERGARTEN TEACHERS		S	50.9
301	BANK TELLERS		C	43.7
370	SECRETARIES, LEGAL		C	49.0
371	SECRETARIES, MEDICAL		C	47.1
372	SECRETARIES, NEC		C	47.7
GROUP 28		0.3		
3	COMPUTER PROGRAMMERS		I	62.5
5	COMPUTER SPECIALISTS, N.E.C.		I	65.3
34	ACTUARIES		I	68.9
35	MATHEMATICIANS		I	74.7
36	STATISTICIANS		I	64.1
43	ATMOSPHERIC & SPACE SCIENTISTS		I	65.2
94	SOCIOLOGISTS		S	71.1
96	SOCIAL SCIENTISTS, NEC		S	69.0
GROUP 29		1.1		
1	ACCOUNTANTS		C	60.6
55	OPERAT. & SYST. RESEARC. & ANAL.		E	59.5
91	ECONOMISTS		I	69.2
GROUP 30		9.0		
4	COMPUTER SYSTEMS ANALYSTS		I	66.0
30	JUDGES		E	78.0
31	LAWYERS		E	76.4
56	PERSONNEL & LABOR REL. WORKERS		E	58.3
82	HEALTH REC. TECHNOL. & TECHNIC.		S	55.5
86	CLERGYMEN		S	59.6
93	PSYCHOLOGISTS		S	73.0
102	AGRICULTURE TEACHERS, COLLEGE		I	72.1
140	TEACHERS, COL., SUBJ. NOT SPEC.		S	67.4
174	VOCATIONAL AND EDUCAT COUNSELORS		S	64.6
184	EDITORS & REPORTERS		A	65.3
192	PUB. REL. MEN & PUBLICITY WRITER		A	62.0
195	RESEARCH WORKERS, NOT SPECIFIED		I	62.7
201	ASS.,CON.,& TREAS.,LOC. PUB. AD.		S	51.9
202	BANK OFFICERS & FINANC. MANAGERS		E	60.1
203	BUYERS & SHIPPERS, FARM PRODUCTS		E	49.0
210	CREDIT MEN		C	56.4
212	HEALTH ADMINISTRATORS		S	60.9
222	OFFICIALS & ADM., PUB. ADM., NEC		E	55.3
225	PURCHASING AGENTS & BUYERS, NEC		E	49.5
235	SCHOOL ADMINISTRATORS, COLLEGE		S	69.8
240	SCHOOL ADMINISTRAT.,ELEM. & SEC.		S	71.2
245	MANAGERS AND ADMINISTRATORS, NEC		E	49.5
265	INS. AGENTS,BROKERS,& UNDERWRIT.		E	49.7
270	REAL ESTATE AGENTS & BROKERS		E	47.8

		PERCENT OF WORKFORCE	HOLLAND CODE	PRESTIGE
GROUP 30 -- CONT.				
271	STOCK & BOND SALESMEN		E	65.5
363	REAL ESTATE APPRAISERS		E	59.7
GROUP 31		0.4		
6	AERONAUT. & ASTRONAUT. ENGINEERS		I	69.0
10	CHEMICAL ENGINEERS		I	69.7
11	CIVIL ENGINEERS		I	62.6
156	MATHEMATICAL TECHNICIANS		I	56.5
GROUP 32		1.4		
2	ARCHITECTS		A	70.9
12	ELECTRICAL & ELECTRONIC ENGINRS.		I	67.9
13	INDUSTRIAL ENGINEERS		E	64.1
14	MECHANICAL ENGINEERS		R	67.1
20	MINING ENGINEERS		R	64.5
21	PETROLEUM ENGINEERS		R	67.0
23	ENGINEERS, NEC		I	66.0
33	ARCHIVISTS AND CURATORS		S	56.4
45	CHEMISTS		I	68.1
51	GEOLOGISTS		I	71.8
53	PHYSICISTS AND ASTRONOMERS		I	73.6
95	URBAN & REGIONAL PLANNERS		I	67.6
GROUP 33		2.6		
22	SALES ENGINEERS		E	62.0
75	REGISTERED NURSES		S	53.8
76	THERAPISTS		S	56.0
113	HEALTH SPECIALITIES TEACHERS,COL		I	75.3
144	SECONDARY SCHOOL TEACHERS		S	62.7
GROUP 34		0.8		

15	METALLURG. & MATERIALS ENGINRS.		I	68.4
42	AGRICULTURAL SCIENTISTS		I	58.5
44	BIOLOGICAL SCIENTISTS		I	68.0
52	MARINE SCIENTISTS		I	71.3
54	LIFE & PHYSICAL SCIENTISTS, NEC		I	74.2
64	PHARMACISTS		I	61.4
72	VETERINARIANS		I	68.3
80	CLIN. LAB. TECHNOLOG. & TECHNIC.		I	52.4
152	DRAFTSMEN		R	50.4
GROUP 35		0.2		
73	HEALTH PRACTITIONERS, NEC		I	61.4
163	AIRPLANE PILOTS		I	62.9
165	MUSICIANS & COMPOSERS		A	45.0
GROUP 36		0.6		
62	DENTISTS		I	76.7
63	OPTOMETRISTS		I	67.0
65	PHYSICIANS, MEDICAL & OSTEOPATH.		I	88.4
81	DENTAL HYGIENISTS		S	55.3
83	RADIOLOGIC TECHNOLOG. & TECHNIC.		I	47.1
OCCUPATIONS THAT WERE NOT GROUPED BECAUSE OF LACK OF DATA TO DO SO		0.8		
103	ATMO,EARTH,MAR,& SPACE TEACH,COL		I	71.4
104	BIOLOGY TEACHERS, COLLEGE		I	72.8
105	CHEMISTRY TEACHERS, COLLEGE		I	72.8
110	PHYSICS TEACHERS, COLLEGE		I	72.0
111	ENGINEERING TEACHERS, COLLEGE		I	73.2
112	MATHEMATICS TEACHERS, COLLEGE		I	71.0
114	PSYCHOLOGY TEACHERS, COLLEGE		S	75.3
115	BUSINESS & COMMERCE TEACHERS,COL		C	73.3
116	ECONOMICS TEACHERS, COLLEGE		I	73.2
120	HISTORY TEACHERS, COLLEGE		S	70.4
121	SOCIOLOGY TEACHERS, TEACHERS		S	72.0
122	SOCIAL SCIENCE TEACHERS, NEC,COL		S	73.7
125	EDUCATION TEACHERS, COLLEGE		S	74.9
126	ENGLISH TEACHERS, COLLEGE		A	70.3
130	FOREIGN LANGUAGE TEACHERS,COL		S	69.3
131	HOME ECONOMICS TEACHERS, COL		S	73.4
132	LAW TEACHERS, COLLEGE		E	77.1
133	THEOLOGY TEACHERS, COLLEGE		S	69.2
134	TRADE,IND., & TECH. TEACHERS,COL		R	58.0
170	FLIGHT ENGINEERS		R	51.2
383	TELEGRAPH MESSENGERS		C	16.7
475	DATA PROCESSING MACH. REPAIRMEN		R	47.6
512	PAPERHANGERS		R	34.0
605	CHAINMEN,RODMEN,& AXMEN;SURVEY.		R	29.2
634	MEAT WRAPPERS, RETAIL TRADE		R	27.3
770	WAREHOUSEMEN, NEC		R	25.3

		PERCENT OF WORKFORCE	HOLLAND CODE	PRESTIGE
OCCUPATIONS NOT GROUPED -- CONT.				
823	FARM LABORERS,UNPAID FAM. WORKER		R	8.5
923	HEALTH TRAINEES		S	27.0
952	SCHOOL MONITORS		S	19.0
954	WELFARE SERVICE AIDES		S	43.2
963	MARSHALS & CONSTABLES		S	33.7
UNKNOWN OCCUPATION		6.0		